



# COMMEMORATION OF THE INTERNATIONAL DAY FOR THE PRESERVATION OF THE OZONE LAYER, 16TH SEPTEMBER, 2009

## THE SECRETARY-GENERAL, BAN KI-MOON MESSAGE ON THE INTERNATIONAL DAY FOR THE PRESERVATION OF THE OZONE LAYER 16 September 2009

Sustainable development depends, in large part, on the implementation of agreed environmental goals, targets and objectives. Among the considerable number of multilateral environmental agreements agreed between states over the past 40 years, the Vienna Convention for the Protection of the Ozone Layer and, in particular, its Montreal Protocol stands out. The manner in which this instrument for repairing and recovering the Earth's protective shield has been financed and implemented serves as an inspiring example of what is possible.

This year's observance marks yet another milestone, with the deposit of the instruments of accession to the Convention and the Protocol by the youngest democracy in the world, Timor-Leste. Until today, it was the only remaining State outside the ozone protection regime. Now, the Convention and Protocol have achieved universal participation - unique status among the hundreds of treaties deposited with the Secretary-General. Timor-Leste's action sends a strong signal of global solidarity, not only for addressing ozone depletion but for tackling other pressing multilateral challenges, of which climate change is pre-eminent.

Accumulating evidence indicates that the phase-out of substances known as chlorofluorocarbons or CFCs has, since 1990, alleviated the progression of climate change by as much as 12 years. International cooperation on CFCs is a timely affirmation that, through unity of purpose and concerted action, we can minimize risks to our planet and build a safer world for future generations. It is a lesson we must take to heart as we prepare for the United Nations Climate Change Conference in Copenhagen in December.

Some weeks ago, experts from the Montreal Protocol and the UN Framework Convention on



Climate Change and its Kyoto Protocol met in Geneva, Switzerland to chart a strategy on a group of chemicals that cause climate change. Hydrofluorocarbons, or HFCs, which are broadly used as replacements for ozone-depleting substances in foams, refrigeration and air conditioning systems, could, if widely used, contribute significantly to climate change by 2050, thereby undermining efforts to reduce the better-known greenhouse gases, principally carbon dioxide and methane from fossil fuel burning and deforestation.

By working together, the ozone and climate treaties can multiply their impact for sustainable development. Other benefits are likely to include improved energy efficiency in industrial and household processes and appliances, and spin-offs for the wider chemicals agenda, including in the areas of waste management and human health.

The International Day for the Preservation of the Ozone Layer comes some 80 days before the Copenhagen climate conference. Governments must use that occasion to seal the deal on an ambitious, comprehensive and equitable new climate agreement. Without action on climate change, the world faces profound social, economic and environmental disruption. The example of the Montreal Protocol sends a powerful message that action on major global challenges is not only possible, but that the financial and human benefits invariably outweigh the costs.

## STATEMENT FROM: HON. JESCA ERIYO Minister of State for Environment, Ministry of Water and Environment

On this day of 16th September, 2009, countries all over the world are commemorating the International Day for Preservation of the Ozone Layer. The observance takes place once every year on 16th of September. The commemoration of the International Day for Preservation of the Ozone Layer, offers an opportunity for promoting awareness on what has been achieved under the Montreal Protocol on Substances That Deplete the Ozone Layer, what is happening to the Ozone Layer, and actions by different countries that contribute to protection of the Ozone layer. As you may be aware, the Ozone Layer is a shield which protects us from the harmful effects of the sun's rays known as ultra-violet rays.

The Theme of this year is: "Universal Participation: Ozone Protection Unified the World". This is an appropriate theme because it signifies the importance of nations uniting to fight against destruction of the Ozone Layer. As of this month, a total of 195 countries including Uganda are Party to both the Vienna Convention on Protection of the Ozone Layer, and the Montreal Protocol on Substances That Deplete the Ozone Layer. Uganda ratified both the Vienna Convention and Montreal Protocol in 1988. In addition, it is stated that this year's commemoration is particularly significant because of the upcoming milestone on or landmark of 1st January, 2010, by which all developing countries including Uganda, must achieve the 100% (one hundred percent) phase out of ozone depleting substances including those used in refrigeration and air-conditioning such as Chlorofluorocarbons (CFCs). It should also be noted that the main target is: NO IMPORTS INTO UGANDA OF CHLOROFLUOROCARBONS, CARBON TETRACHLORIDE, METHYL CHLOROFORM, AND HALONS USED IN FIRE-FIGHTING, WILL BE ALLOWED FROM THE YEAR 2010 ONWARDS; while ensuring that the ban on Methyl bromide is maintained.

So far, according to the Ozone Secretariat, Uganda has performed very well in Ozone depleting substances (ODS). For example, by the year 2007, Uganda had phased out the use of Methyl bromide in the country, and importation of CFCs has remained far below the allowable annual quota for Uganda for since the year 2006. From the year 2000 onwards consumption of CFCs has reduced by 99%, while imports of ozone-friendly alternatives such as HCFCs, HFCs and others, has increased by about 80%.

The level of awareness in the country on matters pertaining to the Ozone Layer has been increasing over the years, and this is partly attributed to the two projects, namely: (i) the Project on Phase of CFCs in the refrigeration and air-conditioning sector, being implemented under the GTZ-Proklima; and, (ii) the Project for the Phase-out of Methyl bromide use in the flower sector, which was implemented under the auspices of the United Nations Industrial Development Organisation (UNIDO).

The Theme for this year holds a number of messages arising from recent meetings of the Parties to the Montreal Protocol, which I believe should compel us to contribute to global efforts to protect the Ozone Layer. For instance, during the 19th Meeting of the Parties in September, 2007, an agreement was reached by the Parties to adjust the phase-out schedule for Hydrochlorofluorocarbons (HCFCs) controlled under the Montreal Protocol, to enable phase out HCFCs earlier than was originally agreed many years ago. HCFCs are mainly used in the refrigeration and air-conditioning sector. Controls on HCFC imports worldwide will commence by the year 2013; however, restrictions on manufacturing of HCFCs world-wide took effect on 14th May, 2008.

The main reason behind the proposed accelerated phase-out of HCFCs is that although HCFCs are ozone-friendly refrigerants, they have been found to have high global-warming potential which is much higher than that of carbon dioxide. Also since last year (2008) another set of ozone-friendly substances known as Hydrofluorocarbons (HFCs) are being targeted for phase-out just like the HCFCs, because they have a high global-warming potential and also contribute to climate change.

Uganda has in place the National Environment (Management of Ozone Depleting Substances and Products) Regulations, 2001, and the phase-out schedule for HCFCs is due for review by the relevant Government Agencies including the National Environment Management Authority (NEMA), in order to adjust the schedule as proposed by the Parties. Also for the countries in the COMESA Region including Uganda, the Regulations on ODSs have already been harmonised, in order to ensure control and monitoring of illegal trade in ODSs and ODS-dependent equipment in the COMESA region. These harmonised Regulations were approved by the Council of Ministers about a year ago. This means that the importers and the regulating agencies of Government have a big role to play in ensuring that consumers have access to recommended substances which do not deplete the Ozone layer and also do not contribute to global-warming and climate change.

As you are aware, this year in June, Government of Uganda placed a ban on importation old refrigeration equipment into the country, and this ban is to be sustained because of the reasons already highlighted above; as old refrigeration equipment has been found to be the source of emission of ODSs into the atmosphere. Therefore, we should not look at economic gains in the short-run while forgetting to consider the long-term effects of emission of ODSs into the atmosphere. Government Uganda is already engaged in exploring and finding means of mitigating the effects of the ban on old refrigeration equipment, including considering the provision of incentives to dealers and importers of refrigeration equipment.

We should keep in mind that the atmosphere has no boundaries and, therefore, whatever ODS is released in any part of the world that impacts negatively on the atmosphere (e.g., destruction of the Ozone layer), will affect every part of the world over time. We are already experiencing the effects of climate change and even increase in incidence of some crop, animal and human diseases across the world. This year's Theme is very relevant to us, and we need the concerted effort and full participation of everyone including consumers, Customs Department, the Police, Uganda National Bureau of Standards, the policy-makers, the private sector, among others.

Government and NEMA recognise the contributions and support from GTZ-Proklima, the United Nations Industrial Development Organisation (UNIDO), and the United Nations Environment Programme (UNEP). Our great appreciation is also extended to the Department of Plant Protection (MAAIF); Customs Department of Uganda Revenue Authority; Kyambogo University Administration (for providing facilities for training of refrigeration and air-conditioning technicians); Uganda Flower Exporters' Association (UFEA); Uganda National Association for Refrigeration and Air-conditioning; and, Uganda Cleaner Production Centre, for their continued contribution and dedication to complying with the requirements of the Montreal Protocol.

At international level there already exists close collaboration between the Kyoto Protocol Secretariat and the Ozone Secretariat, to ensure that climate change matters are addressed. In the words of Mr. Achim Steiner, the Executive Director of the United Nations Environment Programme (UNEP), ".....multilateral environment agreements like the Montreal Protocol and the Kyoto Protocol have far wider environmental, social and economic benefits than perhaps are fully recognized when they are initially agreed. In short, treaties working together can do far more, more rapidly and at a lower cost".

WISHING YOU HAPPY COMMEMORATION DAY!



## NEWS / KEY MESSAGES

### Decision of the Parties

The Twentieth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, which was held last year (2008) in Doha, Qatar, adopted Decision XX/8 following a Workshop for a Dialogue On High Global-Warming-Potential (GWP) Alternatives To Ozone Depleting Substances (ODSs). In paragraph 2 of the decision the Parties requested the Ozone Secretariat "to prepare a report that compiles current control measures, limits and information reporting requirements for compounds that are alternatives to ozone depleting substances and that are addressed under international agreements relevant to climate change".

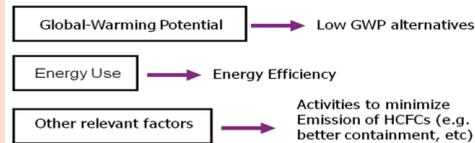
The Ozone Secretariat in consultation with the Technology and Economic Assessment Panel and the Secretariat of the United Nations Framework Convention on Climate Change, identified hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) as the high global warming-potential alternatives as items for discussion in subsequent meetings of the Parties to the Montreal Protocol, since, these two substances are also listed under the Kyoto Protocol for phase-out.

Also there is a proposed amendment to Annex-A of the Kyoto Protocol to include HCFC-22 (R-22) and HFC-23. The upcoming Copenhagen 2009 Conference for the Parties to the Kyoto Protocol, before end of the year, is expected to be a turning point on matters of climate change and linkages with Montreal Protocol. In prioritising alternatives for adoption, it has been stated that three factors need to be taken into consideration by governments:

(a) energy efficiency; (b) cost of alternatives; and, (c) global warming potential (GWP). ODSs and some ozone-friendly substances are now known to contribute to climate change by about 0.5 increase of atmospheric temperature.

According to the Environmental Investigation Agency(EIA) the biggest emitters of HFCs are mobile air conditioning (MAC) systems in cars (about 66%), followed by commercial refrigeration, and particularly supermarket refrigeration (23%); and finally stationary air conditioning systems (6%) such as found in retail units and offices.

**19<sup>th</sup> Meeting Decision Of The Parties To The Montreal Protocol**  
Decision XIX/6 (j) – when selecting substitutes and alternatives, the following should be taken into account:



ones: (a) adhere to the "precautionary principle" because waiting for complete scientific proof can delay action to the point where the damage will become irreversible; (b) send consistent and credible signals to industry so that they have an incentive to develop new and cost-effective alternative technologies; (c) ensure that improved scientific understanding can be incorporated quickly into decisions about the provisions of a treaty; (d) promote universal participation by recognizing the "common but differentiated responsibility" of developing and developed countries and ensuring the necessary financial and technological support to developing countries; and, (e) control measures should be based on an integrated assessment of science, economics, and technology.

### TECH-TALK AND TIT-BITS FROM AROUND THE WORLD

#### Industry Trends

Two industry dynamics of interest are transition from HFC-134a to HC-600a, and using HFCs with low global warming potential (GWP). Conversions from HFC-134a to HC-600a began several years ago in Japan. One big manufacturer recently announced their intention to introduce refrigerators using HC-600a refrigerant before end of this year (2009). The transition away from HCFC-22 is nearly complete in almost all developed countries, and the phase-out in North America and Japan is to be completed in the year 2010.

#### Strict Controls On Imports Of Refrigerants Containing HCFCs

Imports of refrigerants containing HCFCs

## OzoNews

will face stringent restrictions from 2010, and the business communities need to start planning for this eventuality from now on, or face escalating costs for retrofitting equipment dependent on HCFC and recycling HCFCs. Besides the European Union, Japan, and North America, in South Africa all new equipment imports into the country will contain the new blends of refrigerants that have been designed to replace HCFCs. The phasing out of HCFCs will also begin in 2010, when the volume of HCFCs imported into South Africa will be restricted.

**Cooling Car**  
In 2006, the European Union's Directive on mobile air-conditioners (MAC) banned the use of mobile air conditioning refrigerants with a GWP over 150 in new model cars by 2011 and in all cars by 2017. Since then, there has been a flurry of activity by manufacturers looking for alternatives. The commercial refrigeration industry is now making faster progress towards climate-friendly alternatives.

**Fridges**  
The Corporate alliance of Coca-Cola, McDonalds, Unilever, and the PepsiCo, among others, with support from Greenpeace and the United Nations Environment Programme, are set to replace HFC technology in favour of natural refrigerants such as Carbon dioxide. Coca Cola plans to install 100,000 cold drink coolers and vending machines using Carbon dioxide as refrigerant by the end of the year. Much greater emissions savings can be achieved by switching supermarket fridges and freezers over to climate-friendly alternatives. Research from EIA has revealed that supermarkets are the biggest source of HFC emissions in the United Kingdom. HFC-134a can remain in the atmosphere for about 15 years.

**Green Customs Guide**  
This guide that was produced in August, 2008, is now available. This Guide provides information and guidance to Customs and other border control officers to assist them in their efforts to monitor and facilitate the legal trade, and to detect and prevent illegal trade in environmentally-sensitive commodities such as Ozone depleting substances, as well as toxic chemicals, hazardous wastes, among others.

chemicals containing chlorine and bromine, once released into the atmosphere, persist and remain intact for long periods of time while destroying the Ozone layer. One particle of chlorine is capable of destroying 100,000 molecules of Ozone, while bromine is 40 times more destructive than chlorine. For example, CFC-12 (R-12) for about 100 years, Halon-1301 can last for an average of 110 years, and HCFC-22 (R-22) for about 13 years.

### Q5: Does Destruction of the Ozone Layer Cause Climate Change?

No, ozone depletion itself is not the main cause of climate change, but ozone depletion and climate change are linked in a number of ways. For example, changes in the meteorological conditions could affect the behaviour of the Ozone layer. Another factor that indirectly links ozone depletion to climate change is the use of some ODSs like CFCs and alternatives such as HFCs and HCFCs which have a high global-warming potential.

### Q7: How is ozone formed in the atmosphere?

Stratospheric ozone ('good ozone') is naturally formed in a chemical reaction involving ultra-violet rays of the sun and oxygen molecules. It is good ozone because it protects the earth from harmful rays of the sun. Tropospheric ozone ('bad ozone') is produced in chemical reactions involving other hydrocarbons, nitrogen oxide gases, etc) and sunlight. This ozone gas occurs near the surface of the earth as a result of pollution from human activities such as burning fossil fuels (petroleum products). It is bad ozone because it can cause chest pains, throat irritation, and chronic coughing and other respiratory allergies; including contributing to global-warming (increase in atmospheric temperature). During certain periods of the year or day bad ozone causes smog (like thick smoke) in large cities.

### Be a Responsible Citizen - Help Protect the Ozone Layer!

THE 2009 OZONE SUPPLEMENT PREPARED BY:  
MARGARET AANYU  
Environment Impact Assessment Officer, and Ozone-Desk Officer, National Environment Management Authority, NEMA-House, Plot 17/19/21, Jinja Road, P. O. Box 22255, Kampala, Uganda. Tel: +256 414 251064/5/8

## STATUS OF UGANDA'S IMPLEMENTATION OF THE MONTREAL PROTOCOL:



Margaret Aanyu, Environment Impact Assessment Officer, and Ozone Desk Officer, National Environment Management Authority

### Ratification of the Convention and Protocol

Uganda has ratified (is party to) the Vienna Convention on Protection of the Ozone, the Montreal Protocol on Substances That Deplete the Ozone Layer and all the Amendments to the Protocol, namely, the Copenhagen, London, Montreal, and Beijing Amendments.

### Management Plans (HPMP).

The Multilateral Fund Secretariat provided the funds for these two Projects that were approved in 1999 and 2002, respectively. UNEP is supporting Uganda in preparing the HPMP. In addition, under the Terminal Phase-out Management Plan (TPMP) which was approved in 2007 is ongoing, the Incentive Scheme has been put in place to assist owners of ODS-dependent equipment to convert such equipment to run on ozone-friendly refrigerants. The TPMP, however, is set to be completed by December, 2010.

### Data Reporting

Every Party to the Montreal Protocol is obliged to report to both the Ozone Secretariat and the Multilateral Fund Secretariat, consumption of different ODSs Every year. Uganda has been reporting ODS consumption data since the year 1999.

### Capacity-Building / Skills Acquisition

Training of refrigeration and air-conditioning technicians commenced under the ODS Phase-out Project since the year 2003. To-date, a total of 110 (one hundred ten) technicians have been trained, in Kyambogo University (KYU) under the memorandum of understanding (MOU) signed in 2003 between NEMA and KYU. Over 100 technicians in the refrigeration and air-conditioning sectors have been trained over the 2003 - August, 2009 period. Technicians were selected from different companies (hotels, industries, flower farms, embassies, repair workshops, health units, etc. Each trained technician has been awarded a Certificate in "Good Refrigeration Practices".

### Registration of ODS Dealers and Importers

NEMA has a list of ODS importers (see Table 1) who are authorised to import ODSs in accordance with the allowable annual quota per year. Whatever the number of importers, they must not exceed the import quota for each year when all the individual imports are added up (see Table 2). Interested companies dealing in ODSs can still register with NEMA at no cost.

### Importation of Ozone-friendly Substances and Equipment

A number of ozone-friendly alternatives are already being imported into Uganda, for example, R-22; R-134a; R-404A; R-407; R-410A; Ammonia; R600A (Isobutane). These substances are replacing use of CFCs in the country.

### Legislation

The National Environment (Management of Ozone Depleting Substances) Regulations, 2001, are being implemented. The Regulations provides for license system for controlling importation of Ozone depleting substances (ODS) into the country; and contains the list of restricted or banned ODSs (CFCs, HCFCs, Carbon tetrachloride, Halons, Solvents, Methyl bromide, Aerosols) and ODS-dependent equipment, and the phase-out schedule for different as prescribed under the Montreal Protocol on Substances That Deplete the Ozone Layer

### Challenges

Recent surveys reveal that more than 50 (fifty) percent of the refrigeration equipment imported into Uganda is non-operational or faulty, and the faulty parts cannot be easily replaced. These old pieces of equipment are a main source of leakage of refrigerants

and emission into the atmosphere as leak detectors are faulty or damaged. Also many technicians do not have the required skills to handle the delicate refrigeration and air-conditioning equipment, in terms of detecting leakages and performing repairs in an effective manner. This is one of the justifications for the ban on importation of old fridges into the country.

Another challenge is the relatively high cost of new and ozone-friendly refrigeration and air-conditioning equipment. Furthermore, there is need to put in place an incentive (e.g., tax exemptions) and disincentive (e.g., tax levies) mechanism for dealers and importers of ODSs and ODS-dependent equipment, to promote trade in ozone-friendly technologies or equipment while prohibiting illegal trade in ODSs and ODS-dependent equipment.

Finally, because most HCFC consumption is in the refrigeration sector, the fleet of HCFC-dependent equipment continues to expand world-wide, increasing the need for HCFC for servicing despite future controls under the Montreal Protocol (MP) that will limit supply. Also due to the low price of HCFCs as compared to alternatives and the degree of availability of affordable alternative technologies for the developing country context. The price of HCFC-22 in particular has remained low and is expected to remain so in the foreseeable future. An added barrier is the fact that many HCFC-using enterprises are in possession of manufacturing equipment that is far from the end of its product life as a result of recent conversion from CFC use. There is consequently little incentive for countries to phase out or even curb HCFC growth in advance of the MP requirements.

## FREQUENTLY ASKED QUESTIONS

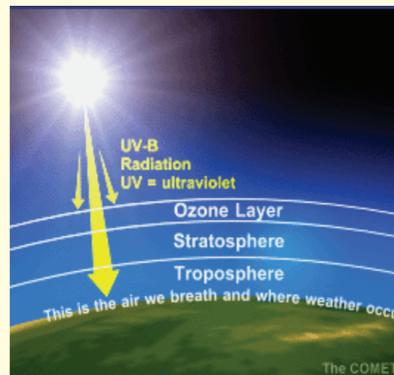
There are number of components which need to be understood concerning the Ozone layer. Below are a set of frequently asked questions.

**Q1: What is Ozone And Where is It In The Atmosphere?**  
Ozone is a gas that occurs naturally in the atmosphere, and is mainly found in two regions of the atmosphere. About 10% of total ozone gas is found in the region called troposphere which lies 10 to 16km above the earth's surface; and 90% of the total ozone gas is found in the region called the stratosphere that lies between 16 and 50km above the earth's surface. It is the stratosphere that is referred to as the "Ozone Layer" and it surrounds the whole earth (see Figure 1).

Figure 1: Location of Ozone Layer

**Q2: Why Do We Care About Atmospheric Ozone: What are the Environmental Effects of Ozone Layer Depletion and in Relation to Climate Change?**

Ozone in the stratosphere absorbs the harmful ultraviolet-B (UV-B) rays of the sun before they reach the earth's surface. As a result, the amount reaching the earth's surface is greatly reduced. If UV-B rays are not absorbed before reaching the earth's surface, they can cause a number of harmful effects as shown in Table 2.



Category	Effects
Human health	● Damage to DNA and suppression of immune system resulting in increase in infectious diseases; Skin cancer; Eye cataract.
Vegetation (e.g., Trees, Crops) Aquatic (Water) organisms	● Reduces crop yields, and damage to seeds; Reduces quality of crops. ● Damage to plants in lakes, oceans, rivers, etc; depletion of fish larvae and general degradation of fisheries resources, and affects food supply for organism living in lakes, oceans, etc.
Materials	● Damage to certain types of plastics, rubber, paints especially in the tropical regions where atmospheric temperatures are high.

Table 2: Effects of Ozone Layer Depletion  
Q3: What Causes Destruction of the Ozone Layer?

When ODSs such as CFCs, HCFCs used in refrigeration and air-conditioning, Methyl bromide used in controlling crop pests, halons used in fire-fighting, Carbon tetrachloride in dry-cleaning, Methyl chloroform used as solvent in industrial processes, are released and reach the Ozone layer, the reactive chlorine and bromine atoms contained in these ODSs combine with the ozone atoms to form other types of gases. In doing so, the amount of pure ozone gas (molecules) is reduced and certain parts of the Ozone layer remain without ozone gas, creating what is known as the Ozone hole. Where the ozone hole exists, the harmful UV-B rays from the sun go through the atmosphere without being trapped and reach the earth's surface. For example, countries in the southern hemisphere (e.g., South Africa, Australia and New Zealand region) and in the northern hemisphere (the Greenland region), are already at high risk of experiencing extensive harmful effects of UV-B rays.

### Q4: For How Long Can Ozone Depleting Substances Stay in The Atmosphere?

Scientific evidence accumulated since the 1970s has revealed that certain man-made