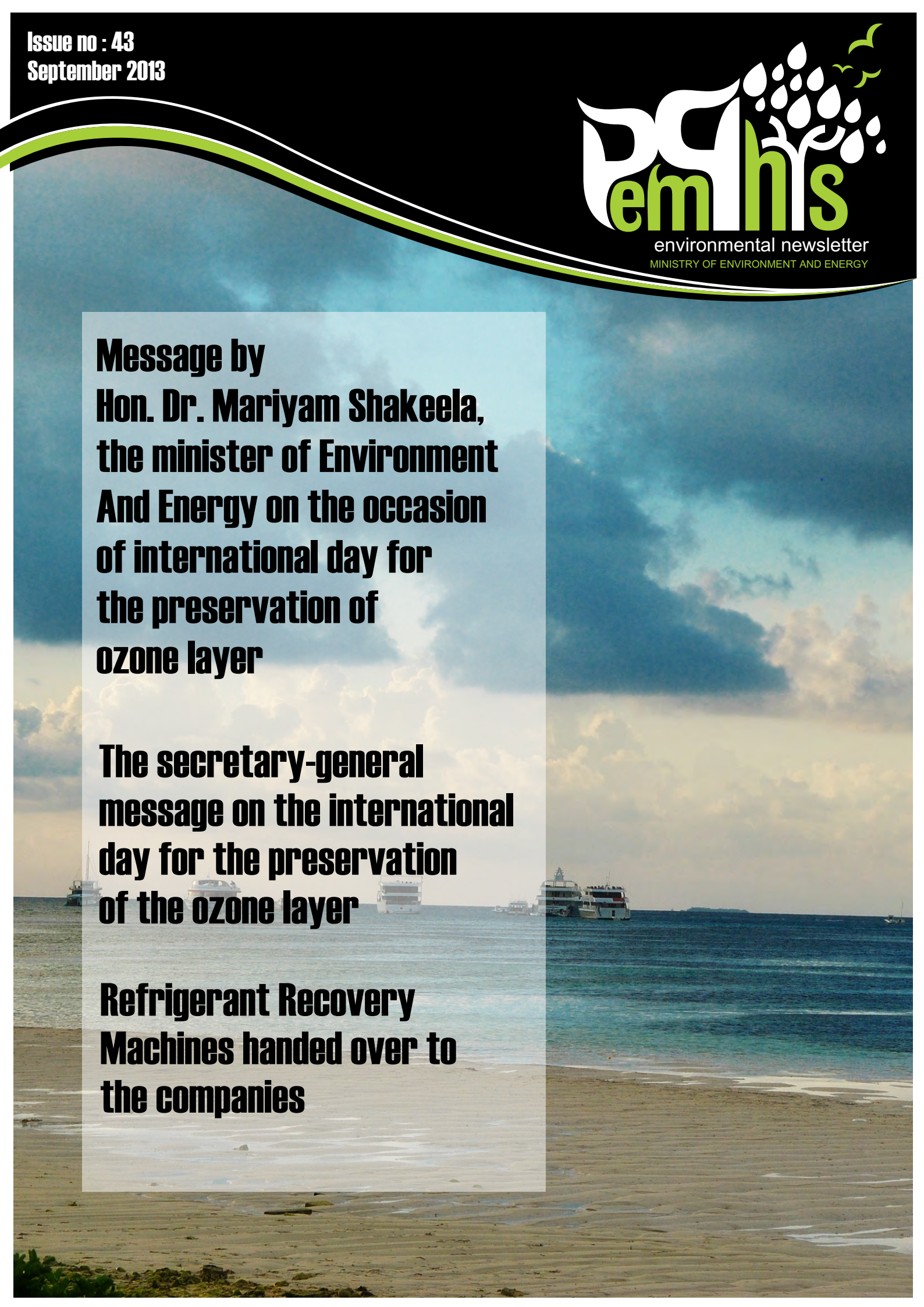


**Message by
Hon. Dr. Mariyam Shakeela,
the minister of Environment
And Energy on the occasion
of international day for
the preservation of
ozone layer**

**The secretary-general
message on the international
day for the preservation
of the ozone layer**

**Refrigerant Recovery
Machines handed over to
the companies**



**MESSAGE BY HON. DR. MARIYAM
SHAKEELA, THE MINISTER OF
ENVIRONMENT AND ENERGY ON THE
OCCASION OF INTERNATIONAL DAY FOR
THE PRESERVATION OF OZONE LAYER**

16 September 2013



Today as we celebrate the International Day for the Preservation of Ozone Layer, it is important to take this opportunity to note that a healthy ozone layer is indeed inherently linked with the environment and development of the Maldives. The slogan of this year, “A healthy atmosphere, the future we want”, aptly underscores the role of an integrated, holistic and collaborated approach, particularly through the participation of individual actors. Today then presents an opportunity for us to reflect upon and make the necessary behavioural changes required of us to achieve this goal. This may not be easy, but it is necessary to secure our collective future.

A healthy ozone layer is also one of the pre-requisites for the realisation of sustainable development. As such, it is necessary that we work to integrate the case of a healthy ozone layer and link it with climate change as we approach the Sustainable Development Goals and the post 2015 development agenda process.

To date, Maldives has made significant and notable progress through our work with the Montreal Protocol. This Protocol, which Maldives became a party in 1989, has consistently been recognised as the most successful multilateral environmental agreement.

Although small, Maldives has gone over and beyond its capacity to protect the ozone layer and has achieved significant success to this regard. We have phased out Chlorofluorocarbons (CFCs) in the year 2008, two years ahead of the target date as stipulated under the Montreal Protocol schedule. Currently, we are in the process of phasing out Hydrochlorofluorocarbons (HCFCs) in the year 2020, ten years ahead of the schedule.

Indeed, the secret of our success thus far is the commitment of the government and the people and the collaborative nature of this relationship. It is then imperative that future government policies be implemented in the same spirit of partnership and collaboration. On this day, I congratulate all Maldivians on what we have achieved as a country thus far, and call for renewed commitment to what remains to be done. It is my utmost hope that we continue to work together to protect our ozone layer and environment. I pray for the guidance of the Almighty Allah to this regard.

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THE SECRETARY-GENERAL

**MESSAGE ON THE INTERNATIONAL DAY
FOR THE PRESERVATION OF THE OZONE
LAYER**

16 September 2013

Extraordinary challenges require extraordinary responses. A generation ago, the world's nations agreed to act definitively to protect the ozone layer, initiating an inter-governmental process that blazed new trails.

As we implement the outcomes of the 2012 Rio+20 Conference on Sustainable Development, the remarkable success story of the Montreal Protocol on Substances that Deplete the Ozone Layer provides a beacon of hope. It provides protection for the ozone layer, significantly contributes to climate mitigation and reminds us that, faced with existential threats, the nations of the world are capable of cooperation for the common good.

My hope is that this success will inform and inspire the international community in charting a new vision and responsive framework for the period beyond 2015, the deadline for achieving the Millennium Development Goals. Sustainable development -- enabled by the integration of economic growth, social justice and environmental stewardship -- must become our global guiding principle and operational standard.

On this International Day for the Preservation of the Ozone Layer, I commend all who have made the Montreal Protocol such an outstanding example of international cooperation. I urge Governments, industry, civil society and all other partners to apply the same spirit to the other great environment and development challenges of our times.

Refrigerant Recovery Machines handed over to the companies



The Ministry of Environment and Energy is responsible for the implementation of the Montreal Protocol activities in the country. Under the HCFC Phase-out Management Plan (HPMP) of Maldives, Maldives has agreed to phase-out all uses of HCFCs except for 2.5% of baseline as service tail by 2020 and complete phase-out of all uses by 2025. As per the schedule proposed for HCFC phase-out, Maldives has started controlling the import of HCFCs starting from 2011.

At this stage, there is a need to implement steps to sustain ODS phase-out that has been achieved by 1 January 2010 in future and systematically implement projects for HCFC phase-out. This can be achieved through programs targeted at RAC service sector for containment of ODS consumption, amongst others. For the users engaged in servicing ODS using RAC equipment, Maldives has proposed to assist service agencies in maximizing recovery of ODSs.

As part of this programme, 10 Recovery machines and its spare parts were given to 10 different companies on 21 August. The beneficiaries are to carry out the recovery of ODSs and thereby contribute to the reduction in HCFC based equipment population, reduction in waste of HCFCs and maximizing the re-use of HCFCs.

A training programme was also conducted at Maldives Institute for Technology on the operation on use of the recovery machines. 2 members from each company participated in this programme. After the training programme, certificates were handed over to all participants. The ceremony was inaugurated and certificates were distributed by the Minister of Environment and Energy, Dr. Mariyam Shakeela.

UN Secretary-General Appoints New Leadership for Ozone Convention and Financial Mechanism

Sep 6, 2013

Due to the widespread adoption and ratification the Vienna Convention and its Montreal Protocol, supported by the Multilateral Fund, the efforts on ozone have been widely recognised as an example for international co-operation in addressing global environmental challenges.



Secretary-General Ban Ki-Moon has made new senior appointments to head the Secretariats that support the phasing out of ozone-depleting substances

Following an international selection process, Ms. Tina Birbili was announced as the new Executive Secretary to the Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer, and Mr. Eduardo Ganem as the Chief Officer of the Multilateral Fund for the Implementation of the Montreal Protocol

FURTHER RESOURCES

- UNEP Ozone Secretariat
- Vienna Convention for the Protection of the Ozone Layer
- Montreal Protocol on Substances that Deplete the Ozone Layer
- Multilateral Fund for the Implementation of the Montreal Protocol
- UNEP Ozone Action Programme
- Most Widely Ratified Treaty in UN History Marks 25th Anniversary

"The Secretary-General's appointments of Ms. Birbili and Mr. Ganem come at an exciting time for international action for the protection of the ozone layer," said Achim Steiner, UN Under-Secretary-General and Executive Director of UNEP.

"The Vienna Convention/Montreal Protocol and the Multilateral Fund represent a shining example of how science, technology, finance and global consensus can combine to produce real breakthroughs for our planet. Indeed, the great success of these international instruments has raised expectations of their future role in supporting global environmental cooperation. We warmly welcome the appointment of Ms. Birbili and Mr. Ganem as professionals with both the expertise and experience to lead their respective Secretariats."

With 197 parties, the Vienna Convention and its Montreal Protocol are the most widely ratified treaties in UN history, and have to date, enabled reductions of over 98 per cent of all global consumption of controlled ozone-depleting substances.

Indications are that atmospheric levels of key ozone-depleting substances are falling, and it is believed that with the full implementation of the Protocol, the ozone layer should return to pre-1980 levels between 2050 and 2075.

The Multilateral Fund for the Implementation of the Montreal Protocol was established in 1991 to support countries in implementing efforts to phase out ozone-depleting substances under the Montreal Protocol. The Fund has to date approved activities including industrial conversions, technical assistance, training and capacity building worth over US\$3 billion.

Due to the widespread adoption and ratification the Vienna Convention and its Montreal Protocol, supported by the Multilateral Fund, the efforts on ozone have been widely recognised as an example for international co-operation in addressing global environmental challenges.

The Secretariats of the Vienna Convention/Montreal Protocol and the Multilateral Fund are hosted by the United Nations Environment Programme (UNEP).

Source: unep.org

Workshop on Good Service Practices and Retrofits Options in Refrigeration and Air-conditioning for Resort staffs has been held



Ministry of Environment and Energy conducted a 3 day workshop on "Good Service Practices and Retrofits Options in Refrigeration and Air-conditioning" at the Maldives Institute of Technology. The workshop was aimed for the R&AC technicians at the Resort Sector. This workshop was held from 27th – 29th August 2013.

The workshop covered introduction of Environmental impact and ODS phase-out in Maldives, fundamentals of Refrigeration and Air conditioning, orientation tools and discussion on Good Service Practices and Theory & Practical sessions on Good Service Practicing in servicing refrigerants. The workshop also included a field visit session where the participants visited a nearby resort and observed the maintenance and housekeeping of refrigerants.

The main objective of this workshop was to impart theoretical knowledge and practical skills on retrofit options in refrigeration and air conditioning, and to create awareness about the good service practices. The lectures and the practical sessions were delivered by the lecturers of the Maldives institute of Technology.

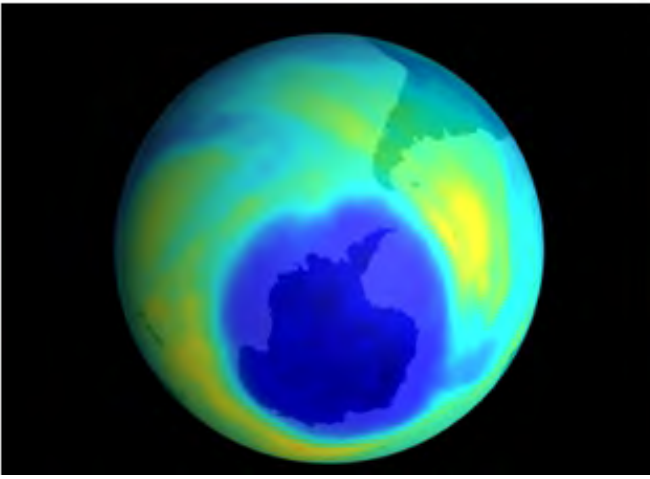
New Findings

Ozone Hole Might Slightly Warm Planet, Computer Model Suggests

Aug 8, 2013

A lot of people mix up the ozone hole and global warming, believing the hole is a major cause of the world's increasing average temperature. Scientists, on the other hand, have long attributed a small cooling effect to the ozone shortage in the hole.

continued on page 4



A map of ozone concentrations in the Southern Hemisphere shows thinning of the ozone layer over the South Pole. This region of reduced ozone, which is called the "ozone hole," causes changes in wind patterns and cloud cover. (Credit: NASA)



The findings, which were published on 5 September, in IOP Publishing's journal *Environmental Research Letters*, could have wide-reaching implications for aviation policy as ozone is a potent greenhouse gas with comparable short-term effects to those of carbon dioxide (Co2).

Now a new computer-modeling study suggests that the ozone hole might actually have a slight warming influence, but because of its effect on winds, not temperatures. The new research suggests that shifting wind patterns caused by the ozone hole push clouds farther toward the South Pole, reducing the amount of radiation the clouds reflect and possibly causing a bit of warming rather than cooling.

"We were surprised this effect happened just by shifting the jet stream and the clouds," said lead author Kevin Grise, a climate scientist at Lamont-Doherty Earth Observatory of Columbia University in New York City. Grise notes this small warming effect may be important for climatologists trying to predict the future of Southern Hemisphere climate.

The work is detailed in *Geophysical Research Letters*, a journal of the American Geophysical Union. Grise collaborated on the study with Lorenzo Polvani of Columbia University, George Tselioudis of NASA Goddard Institute for Space Studies, Yutian Wu of New York University, and Mark Zelinka of Lawrence Livermore National Laboratory.

Source: <http://www.sciencedaily.com>

Pacific Flights Create Most Amount of Ozone

Sep 4, 2013

The amount of ozone created from aircraft pollution is highest from flights leaving and entering Australia and New Zealand, a new study has shown.

The researchers, from Massachusetts Institute of Technology, used a global chemistry-transport model to investigate which parts of the world are specifically sensitive to the creation of ozone and therefore which individual flights create the highest amounts.

The results showed that an area over the Pacific, around 1000 km to the east of the Solomon Islands, is the most sensitive to aircraft emissions. In this region, the researchers estimated that 1 kg of aircraft emissions -- specifically oxides of nitrogen (NOx) such as nitric oxide and nitrogen dioxide -- will result in an extra 15 kg of ozone being produced in one year.

The sensitivity in this area was around five times higher than the sensitivity in Europe and 3.7 times higher than the sensitivity in North America.

Lead author of the paper, Steven Barrett, said: "Our findings show that the cleanest parts of the atmosphere exhibit the most dramatic response to new emissions. New emissions in this part of the Pacific will result in a relatively larger response from the atmosphere."

In an analysis of around 83,000 individual flights, the researchers found that the 10 highest ozone-producing flights either originated, or were destined for, either New Zealand or Australia. A flight from Sydney to Bombay was shown to produce the highest amount of ozone -- 25,300 kg -- as the majority of the flight passed through the area in the Pacific where the sensitivity was the highest.

Furthermore, the aircraft leaving and entering Australia and New Zealand are usually very large and the flight times are often very long, meaning more fuel would be burnt and more NOx emitted.

Ozone is a relatively short-lived greenhouse gas, and its production and destruction relies heavily on the local chemical state of the atmosphere, so its effects are felt in specific regions at specific times rather than on a global scale.

The researchers found that flights in October cause 40 per cent more NOx emissions than flights in April.

"There have been many studies of the total impact of civil aviation emissions on the atmosphere, but there is very little knowledge of how individual flights change the environment.

"The places that the sensitivities are highest now are the fastest growing regions in terms of civil aviation growth, so there could potentially be ways to achieve significant reductions in the climate impact of aviation by focusing on re-routing aircraft around the particular regions of the world where ozone formation is highly sensitive to NOx emissions..

"Of course, longer flights are going to burn more fuel and emit more CO2, so there will be a trade-off between increasing flight distance and other climate impacts, such as the effect of ozone. The scientific underpinning of this trade-off needs further investigation so that we have a better understanding and can see whether such a trade-off can be justified," continued Barrett.

Researchers find link between ozone, heart disease

Sep 8, 2013

UC Berkeley researchers have discovered a link between the regional prevalence of the common air pollutant ozone and an increased risk of premature death from heart disease, the No. 1 cause of death in the United States.

The team used a state-of-the-art statistical model to aggregate mortality rates from different regions in California from 1982 to 2000 and levels of ozone and particulate matter gathered from government monitors situated across California. They found that in sunny areas such as Los Angeles, where there is a high concentration of ozone, more deaths resulted from cardiovascular issues.



The study is the first to show that exposure to ozone — a powerful greenhouse gas that protects the Earth from ultraviolet rays but acts as harmful chemical smog in the lower atmosphere — can lead to death from cardiovascular disease instead of just respiratory disease.

According to Michael Jerrett, chair of the School of Public Health's environmental health sciences department and a participant in the study, ozone and a few other pollutants penetrate deep into the lungs, where they exchange oxygen and cause "oxidative stress." The lungs then mount a defense against the foreign substances that, in combination with the stress, begins an inflammatory process that can spread to the cardiovascular system. This causes both a shrinkage and thickening of the coronary artery, blocking blood flow to the heart and potentially causing a heart attack.

"Another reason to like the Bay Area is the foginess protects us from this pollution," Jerrett said.

He estimates that according to the statistical model, anywhere from 100,000 to half a million deaths can be attributed to air pollution, although there is "no guarantee" that global organizations will take the data into consideration to further regulate ozone levels, despite the potential benefits.

"One of the problems is that some of the effects we're dealing with may happen 30, 50, a hundred years out, and people have a tendency to discount the future," Jerrett said.

Another obstacle in increasing regulation of ozone — which also could help mitigate climate change — comes from what Seth Shonkoff, an environmental health researcher at UC Berkeley who wasn't affiliated with the study, calls an "environment against the economy" narrative.

"A lot of political pressure comes from this false idea that doing things better for the environment are worse for the economy," he said, adding that emission-reduction technologies are regarded as too costly for businesses to legitimately consider.

However, he noted that “morbidity and mortality” driven by air pollution creates a significant drain on the economy, because tax dollars have to pay for the hospitalizations.

According to the researchers, about 119 million people live in areas that do not meet ozone regulation standards in the United States, but many are unaware of this fact and its implications.

“It's not just doing the science but communicating the science to the community in ways that make people feel empowered to do something about it,” Shonkoff said.

Source: The daily California News

OZONE DEPLETION

Ozone layer is a layer in Earth's atmosphere which absorbs most of the sun's UV radiations. Ozone is a gas made up of three oxygen atoms (O₃). Almost all of the Earth's ozone is found in the layer of the atmosphere called the stratosphere, which extends between 10 to 50 km above the earth's surface.

The depletion of the ozone layer by ozone depleting substances (ODS) was first noted in 1970s. ODS are chlorinated, fluorinated or brominated hydrocarbons, which can react with ozone molecules in the stratosphere. When Ozone Depleting Substances reach the stratosphere, the ultraviolet radiation from the sun causes them to break apart and release chlorine atoms which react with ozone, starting chemical cycles of ozone destruction that deplete the ozone layer. One chlorine atom can break apart more than 100,000 ozone molecules. These ODS were widely used in Refrigeration, Air conditions, insulating forms and solvents.

HARMFUL EFFECTS OF OZONE LAYER DEPLETION

Depletion of Ozone layer can cause harmful effects on:

1. On human health
2. On plants and trees
3. On aquatic organisms

EFFECT ON HUMANS:

Since the ozone layer absorbs UVB ultraviolet light from the sun, ozone layer depletion is expected to increase surface UVB levels, which could lead to damage, including increase in skin cancer and in malignant melanoma development. UVB has also been linked playing an important role in clouding of the eye lenses which is also known as Cataracts.

EFFECT ON PLANTS AND TREES

Recent studies have suggested that nearly 30 to 50 % of all plant and crop species are deleteriously affected by UV-B. The types of impacts also vary greatly. They may include yield but also may involve changes such as leaf size, photosynthesis rate, and resistance to diseases and insects.

One major concern with trees is that any reduction in their productivity due to increased UV would affect their uptake of carbon dioxide from the atmosphere. This would increase CO₂ levels significantly. Thus, ozone depletion could lead to the greenhouse effect. That in turn, could cause precipitation patterns, temperatures, and so on, which would impact life cycle of the Earth

EFFECT ON AQUATIC ORGANISMS

Exposure to solar UVB radiation has been shown to affect in phytoplankton, resulting in reduced survival rates for these organisms. Scientists have demonstrated a direct reduction in phytoplankton production due to ozone depletion-related increases in UVB.

Solar UVB radiation has been found to cause damage to early developmental stages of fish, shrimp, crab, amphibians and other animals. The most severe effects are decreased reproductive capacity and impaired larval development.

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