

## OZONE DAY BICYCLE RACE HELD



The final event to mark this year's Ozone Day; the 'Ozone Day Bicycle Race 2010' was held at Hulhumale' on 8th October.

The bicycle race, organized jointly with the Maldives Olympics Committee, was aimed at creating awareness about the harmful gases released by the motor-vehicles into the atmosphere, create more understanding about the Ozone layer and also to promote the use of bicycles in the Maldives. Over 110 competitors took part in the race in five age categories; under 12 mixed, under 14 mixed, under 19 mixed, over 19 female and over 19 male.



All participants were given certificates while winners from each category received bicycles, medals and cash prizes.

Prizes to the winners were given away by the Honorary Chairman of the Maldives Olympics Committee Mr. Mohamed Zahir Naseer, Olympic Committee's Vice Chairman Dr. Hussain Haleem and Senior Administrative Officer of Housing Development Co-operation Ms. Khadheeja Mohamed.



Special information stalls were also set up to spread information to raise public awareness. They included stalls from JCI Maldives (NGO) and Ministry of Health and Family.

A large number of spectators attended to witness and cheer for the participants.

The Ministry of Housing and Environment conducted a number of colorful activities earlier in the month of September to mark this year's Ozone Day.

The Word Ozone Day marks the importance of the saving the Ozone layer and its role in the environment. The activities to mark this year's Ozone Day were held under the theme "Ozone Layer Protection: Governance and Compliance at their best."

World Ozone Day is celebrated every year on 16th September.

# 4TH PROVINCIAL SESSION ON ENVIRONMENTAL AWARENESS

*Mohamed Naseeh*

The Environment Department has conducted the fourth of a series of provincial sessions on environmental awareness for students of Haa Dhaalu Kulhudhuffushi. The session was held from 8 a.m. to 5:30 p.m. at Afeefuddin School on 25th October 2010.

Over 80 students (from grades 5 -7) from Afeefuddin School and Haa Dhaalu Atoll Education Centre participated in this session.



The main objectives of this session were to raise environmental awareness amongst students on climate change and its impacts, Maldives becoming a carbon neutral nation, the importance of ozone layer protection, coastal erosion, water conservation and environmental health.



The chief guest for the occasion was Mr. Abdul Latheef Qasim, the Deputy State Minister of Upper North Province, who inaugurated the session and addressed the students.

At the end of the session, certificates were given to all students who took part in the session and prizes were given to the groups which won the various activities which were carried out throughout the session.

The ministry's resource team, upon the request of the Upper North Province Office, also met with all the NGOs of Kulhuduffushi on the evening of 16th October. A



special presentation on Climate Change and carbon neutrality was given to the group, and the ministry team answered questions put forward to them on different environmental issues faced in the island.



This session in Kulhudhuffushi will be the last of the series for the year 2010 as the academic year ends in November. The next session will be conducted in January 2011 with the venue and date yet to be finalized.

# AMMONIA AS A REFRIGERANT

*Zainab Gulisthan*

Globally, there is growing interest in ammonia as a refrigerant. Restrictions on chlorine and fluorine containing refrigerants have focused attention on ammonia to emerge as one of the widely used refrigerants that, when released to the atmosphere, do not contribute to ozone depletion and global warming. Ammonia is an efficient refrigerant used in food processing and preservation, as well as much other refrigeration and air-conditioning processes. Ammonia has desirable characteristics as a refrigerant, which have been well known for over a century. It is corrosive and hazardous when released in large quantities. Because of its irritating odor, persons will not voluntarily stay near concentrations that is health threatening. Although ammonia will burn in a narrow range of high concentrations, it is difficult to ignite and will not support combustion after the ignition source is withdrawn.

## **BACKGROUND/HISTORY OF USE**

Ammonia (chemical symbol  $\text{NH}_3$ ) is produced both naturally and as a byproduct of numerous manmade reactive processes. Large amounts of naturally occurring ammonia gas come from live stock animals, soil surfaces, and even the human body. Manmade processes that emit ammonia to the atmosphere include fuel combustion processes and sewage treatment plants. The nitrogen component of ammonia was first recognized as an important fertilizer around 1840, and ammonia was first used as a refrigerant around 1850.

## **CURRENT USES OF AMMONIA**

Ammonia is an alkaline, colorless chemical compound that is well recognized as the basis for household cleaning products, and also has many agricultural, industrial and commercial uses. It is available in four generally recognized grades - fertilizer, refrigerant, federal and metallurgical - depending on its level of purity. Refrigeration grade ammonia is 99.98 percent pure and is relatively free of water and other impurities. It is readily available, inexpensive, operates at pressures comparable with other refrigerants, and is capable of absorbing large amounts of heat when it evaporates.

## **REFRIGERATION USES OF AMMONIA**

With increased regulation being placed upon the use of

chlorofluorocarbon (CFC), hydrochlorofluorocarbon (HCFC) and hydrofluorocarbon (HFC) based refrigerants, and the pending phase-out of HCFCs altogether, alternative refrigerants for use in existing refrigeration systems are actively being investigated. These alternative refrigerants must have thermodynamic characteristics similar to those of halocarbons and be safe for humans and the environment.

Ammonia is one alternative refrigerant for new and existing refrigerating and air-conditioning systems. Ammonia has a low boiling point (-28°F @ 0 psig), an ozone depletion potential (ODP) of 0.00 when released to atmosphere, and a high latent heat of vaporization (9 times greater than R-12). In addition, ammonia in the atmosphere does not directly contribute to global warming. These characteristics result in a highly energy-efficient refrigerant with minimal environmental problems. From a purely economic analysis, without unnecessary regulatory burdens, ammonia should find broader applications as a refrigerant than it currently enjoys.

## **ENVIRONMENTAL ASPECTS**

Ammonia is not a contributor to ozone depletion, greenhouse effect or global warming. Thus; it is an “environmental friendly” refrigerant. Ammonia has no cumulative effects on the environment and a very limited (a few days<sup>6</sup>) atmospheric lifetime. Because of the short lifetime of ammonia in the atmosphere, it is considered to be “biodegradable.” It is even used to reduce harmful stack gas emissions by injection into boiler and gas turbine exhaust streams. Ammonia may be released to the atmosphere by sources such as decaying organic matter, animal excreta, fertilization of soil, burning of coal, wood, etc., and by volcanic eruptions. Ammonia may be released to water as effluent from sewage treatment and/or industrial processes and as runoff from fertilized fields or areas of livestock concentrations. Ammonia may be released to soils from natural or synthetic fertilizer applications, livestock excrement, the decay of organic material from dead plants and animals, or from the natural fixation of atmospheric nitrogen.

## **References**

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# THE UNIQUE WORLD OF MANGROVES

*Hamdhoon Mohamed*

Mangroves are trees or shrubs which grow in saline coastal habitats. These plants are also found in mangrove swamps. They act as a natural barrier against the coastal erosion, during hurricanes and tsunami. It is also helps in the maintenance of water quality by stabilizing the bottom sediments of beach. Mangroves can harbor lots of organisms such as algae, barnacles, oysters and sponges in mesh of their roots. In this article I would like to focus on the biology of mangroves and their contribution to our environment.



There are 110 species of Mangroves found in the world. Mangroves have a unique way of respiration. In some species gaseous exchange is done by the means of lenticels found on their barks. Other breathes through “pneumatophores” (also known as breathing tube) which is root like structure. Breathing tubes erect out of water in submerged mangroves.

The roots and shoots are highly specialized to live in high salt concentration. Roots are impermeable due to “suberin” accumulation. Shoots store salt in the cell vacuoles and some species directly excrete salt. The leaves are oriented in a manner to reduce water loss during sunny days. Mangroves store gases in their roots. There are 13 species of Mangrove found in Maldives. Mangroves help our environment in many ways. Apart from fighting against coastal erosion, mangroves filter out slit, nutrients and sand which otherwise will go out to the reef. These filtrates may suffocate coral and encourage algal growth. Meshes of roots are habitat to many aquatic organisms and hence contribute to food chain. Mangroves take up more carbon dioxide per unit area than most plants.

So next time when you hear about beach erosion please remember about these plants. It is essential to conserve the habitat of these matchless plants.

## SEVERE COASTAL EROSION AT R. UNGOOFAARU ASSESSED

13 October 2010 - Upon receiving complaints from R. Ungoofaaru of the island experiencing aberrant and severe coastal erosion, a survey team from the Ministry visited the island to assess the extent of the problem and losses to the community.



Preliminary assessments indicate an area of 450 square feet lost into the sea from the island in a period of 2-3 days. More than 40 trees and coconut palms have also fallen as a consequence of this incident. The Ministry is now working with the National Disaster Management Centre to put in place temporary measures to check the erosion and loss and damage to the vegetation and infrastructure.

The Ministry will also produce a detailed report of the incident to determine a more permanent solution to the problem.

*Source: MHE Website*  
<http://www.mhte.gov.mv>

# ENVIRONMENT MINISTER CALLS UPON GOVERNMENTS AROUND THE WORLD TO CHOOSE THE PATHWAY TOWARDS GREEN ECONOMIES



Environment Minister Mohamed Aslam has called upon the countries of the world to choose green energy to build their economies. Speaking at the 4th Preparatory Commission Meeting of the International Renewable Energy Agency held in Abu Dhabi on 24th October 2010), the minister also raised concerns and highlighted the challenges humanity is facing as a result of increased carbon emissions into the atmosphere.

The minister also highlighted about the threats that are faced by the small island states like the Maldives as a consequence of climate change stemming from carbon emission into the atmosphere since industrial revolution. He also stressed that climate change negotiations are not to be dealt same as any other business negotiations since we are talking about the survival of millions of people who had a negligible contribution to climate change. He also called upon the governments to draw their energy policies providing space to promote renewable energy technologies as this is a key step in reducing CO2 emissions. He also urged the governments to take immediate measures in finding solution to climate change and asked the countries not to wait for years but to start tackling it immediately.

He also stated that the Maldives will fully support the activities of IRENA in its efforts to promote renewable energy development.

More than 42 countries have now ratified IRENA and is expected to complete its preparatory phase soon to become a full fledged international organisation.

*Source: MHE Website  
<http://www.mhte.gov.mv>*

## FULLY SPONSORED SCHOLARSHIP OPPORTUNITIES OPEN FOR BSC IN ENVIRONMENTAL MANAGEMENT COURSE



4 October 2010 – The Maldives College of Higher Education (MCHE) has opened up application for the Bachelor of Science in Environmental Management course, which is to be fully sponsored by the Maldives Environmental Management Project, Ministry of Housing and Environment.

In February 2010, MCHE will commence the first year of the B.Sc. in Environmental Management course and foundation studies for students with O/Levels to facilitate direct entry into the degree program the following year. Students with A/Levels will have the opportunity to get direct entry into the degree program.

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To be admitted to the foundation year of study, candidates must have at least 3 passes at GCE O' Level including Chemistry and Biology or Fisheries Science, or qualifications deemed to be equivalent to the above by the Admissions Committee (MCHE).

B.Sc. in Environmental Management course is intended to prepare students for employment in the public and private sector in areas such as Environmental Research, Resource Planning, Environmental Policy, Environmental Management, Urban Planning, Regional Planning, Environmental Protection, Conservation, Environmental Approvals, Environmental Impact Assessments and various roles in the Tourism sector.

Holders of the Diploma and Bachelor Degree in Environmental Management will be qualified to enter a range of professions including, Environmental Officers or Managers, Conservation Officers or Managers, Environmental Education, Sustainable Community Development and Marine and Coastal Management.

Source: MHE Website  
<http://www.mhte.gov.mv>

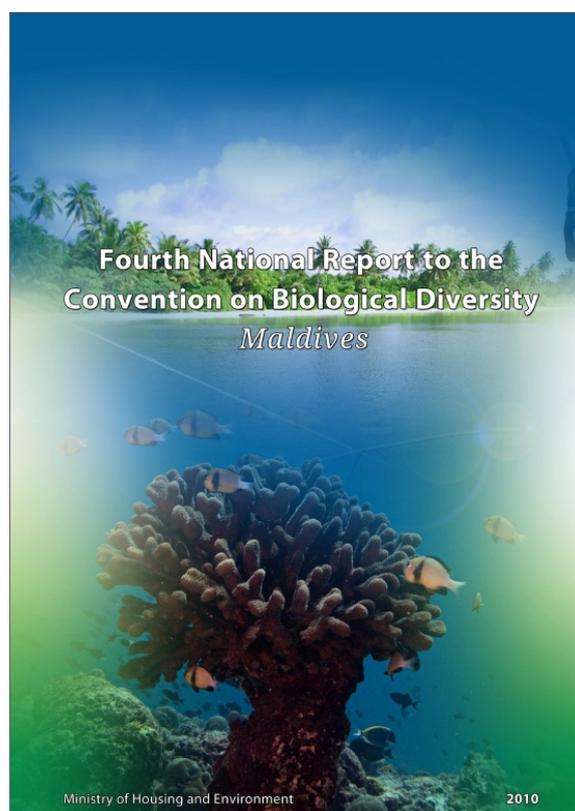
## CLIMATE STRATEGY TRAINING SESSION ON CAPACITY BUILDING AND CO-ORDINATION HELD

Ministry of Housing and Environment and the President's Office jointly held a Climate Strategy Training Session on Capacity Building and Co-ordination from 22nd to 24th October 2010 at Dharubaaruge, Faashanaa Maalam.

Minister of Housing and Environment, Mr. Mohamed Aslam, Minister of State for Housing and Environment, Dr. Mohamed Shareef, members of the Climate Council and other officials from Ministry of Housing and Environment, the President's Office and Ministry of Foreign Affairs attended the session.

The training session was mainly focused on the position of the Maldives at the upcoming Climate Conference (COP16) in Cancun, Mexico. The session was facilitated by Dr. Farhana Yamin and the President's Advisor on Climate Change Mr. Mark Lynas. Several discussions were made on the outcomes of the COP15 summit held in Copenhagen, where the members flagged that certain issues will be progressed in Cancun.

Source: MHE Website  
<http://www.mhte.gov.mv>



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