

## BODY BURDEN

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Toxic chemicals, both naturally occurring and man-made, often get into the human body. We may inhale them, swallow them in contaminated food or water, or in some cases, absorb them through skin. A woman who is pregnant may pass them to her developing fetus through the placenta. The term "body burden" refers to the total amount of these chemicals that are present in the human body at a given point in time. Sometimes it is also useful to consider the body burden of a specific, single chemical, like, for example, lead, mercury, or dioxin.

Some chemicals or their breakdown products (metabolites) lodge in our bodies for only a short while before being excreted, but continuous exposure to such chemicals can create a "persistent" body burden. Arsenic, for example, is mostly excreted within 72 hours of exposure. Other chemicals, however, are not readily excreted and can remain for years in our blood, adipose (fat) tissue, semen, muscle, bone, brain tissue, or other organs. Chlorinated pesticides, such as DDT, can remain in the body for 50 years.



**Organochlorine pesticides**



**organophosphorous pesticides**



**dioxin**

Scientists estimate that everyone alive today carries within her or his body at least 700 contaminants, most of which have not been well studied (Onstot and others). This is true whether we live in a rural or isolated island, in the middle of a large city, or near an industrialized area. Because many chemicals have the ability to attach to dust particles and/or catch air and water currents and travel far from where they are produced or used, the globe is bathed in a chemical soup. Our bodies have no alternative but to absorb these chemicals and sometimes store them for long periods of time. Whether we live in Maldives or New York, Somalia, or Johannesburg, all our bodies are receptacles for a multitude of industrial chemicals. Wherever we live, we all live in a chemically contaminated neighborhood.

Some of the chemicals residing in our bodies are pesticides, and some are used in or produced by other forms of industrial production. Many are found in a wide variety of consumer products. Some chemicals like dioxins and furans are created unintentionally by

*continued on page 2*

industrial processes using chlorine and from the manufacture and incineration of certain plastics. Scientists estimate that there are many other unintentionally created by-products which have not yet been "discovered" since no tests have yet been developed that would fully identify or describe these by-products.

Humans are exposed to chemicals through the food we eat, the air we breathe, and the water we drink and bathe in. Chemicals often coat the surface of dust particles, which we handle or inhale. Contaminated dust is an especially important route of exposure for children who commonly put their hands into their mouths. We are also exposed to hundreds of chemicals in everyday products we use. Paints and varnishes, gasoline, glues, cosmetics, clothes dry-cleaned with solvents, plastic food containers, and home and garden pesticides are just a few examples.

Chemicals can have different effects in people or in wildlife, depending on the amount, timing, duration, and pattern of exposure as well as the properties of the specific chemical. Chemicals can have toxic effects through a variety of mechanisms.

For example, sometimes a chemical attacks and damages or kills cells or tissues in the body. Some chemicals attack the genetic material in the nucleus of a cell, causing damage directly to the DNA, which may create an inheritable defect that is passed on to the next generation. This can lead to gene mutations, which can set in motion a sequence of events leading to cancer, birth defects, developmental or reproductive disorders. Chemicals that cause cancer are called carcinogens. Chemicals that cause birth defects are called teratogens. Chemicals that damage the normal development of the fetus, infant, or child, or damage our reproductive tissues are called developmental/reproductive toxicants. Some chemicals can cause damage through their ability to interfere with normal hormone function. These chemicals are called endocrine disrupters.

Through these various mechanisms, toxic chemicals can cause a long list of health problems. They include, for example, direct damage to the lungs, liver, kidney, bones, blood, brain and other nerves, and the reproductive systems. There are hundreds of adverse health effects that can arise from exposures to chemicals or metals. These potential effects include cancer; high blood pressure; asthma; deficits in attention, memory, learning, and IQ; Parkinson's-like diseases; infertility; shortened lactation; endometriosis; peripheral nerve damage; and dysfunctional immune systems. For example, dioxin is a carcinogen and fetal exposures to dioxin interfere with

normal development, including the immune system.

Fetal exposure to polychlorinated biphenyls (PCBs) is related to behavioral and cognition problems. The immune systems of children in some areas of the far north are unable to produce enough antibodies to make vaccinations effective. Since these children and their mothers carry large chemical body burdens, a chemical link to this problem is likely. Fetal exposure to mercury causes attention, memory, and learning problems later in life. Brain development is also impaired in fetuses and infants exposed to lead.

In general, there is no readily accessible way to know your own body burden. Even if you could learn about your own body burden, you may not find the information useful. Your doctor in general cannot prescribe treatments that will lower the level of chemicals in your body. Finding out about your community body burden, however, is useful, and can lead you and your neighbors to take actions to lower your chemical exposures.

In general, you can find out more about the chemicals in the fish you eat than you can discover about the chemicals stored in your body. In other countries, Sweden for example, body burden monitoring is more extensive, and the government tracks how well it is doing in reducing people's exposures to environmental chemicals by watching the body burdens go down. Body burden monitoring gives them a report card on their primary prevention activities. Body burden monitoring also can serve as an early warning system that identifies new chemicals that are increasing in people, and that the government should pay attention to.

Since we have the rights to know about what chemicals are in our air, water, soil, food and products we use daily, it makes sense that we should have the right to know about the chemicals we carry in our bodies. We should take a lesson from the Swedes and establish extensive community-based body burden monitoring programs around the world.

Testing the body burden tells us something about what chemicals we have been exposed to. It usually tells us almost nothing about whether those exposures are responsible for any health problems. However a single body burden test, or, better yet, community-based monitoring, may indicate a great deal about the overall state of our environment and public health.

There is no general agreement about useful or safe methods for reducing body burdens. The best course is long-term prevention. Contamination of future

*continued on page 3*



generations by toxic chemicals can be prevented by working together to:

- 1) Eliminate the most dangerous persistent chemicals that bioaccumulate (concentrate more as they get higher in the food chain);
- 2) Develop alternative production methods that use non-toxic materials, and
- 3) Ensure that communities, national governments and international agencies take a precautionary approach when it comes to chemicals released into our air, water, and soil.

Changes in lifestyles may prevent some exposures. Recent studies of chemical body burdens in the state of Washington have found that children who ate organic food and who were not exposed to pesticides in their homes had significantly lower body burdens.

Some limited research shows that body burdens of some contaminants stored in fat can be lowered by a combination of special diets, exercise, and saunas. But data are very limited and preliminary. When some metals, like lead or mercury, are present in the body at fairly high levels, "chelating agents" are sometimes used to lower the total body burden of that particular metal. However, "chelation" treatments are somewhat controversial with potential side effects and have not been proven to consistently reduce toxic impacts of exposure. For example, one study showed that a chelating agent used in children with moderately elevated lead levels did not improve neuralgic performance.

#### References

*\*Onstot J, Ayling R, Stanley J. Characterization of HRGC/MS Unidentified Peaks from the Analysis of Human Adipose Tissue. Volume 1: Technical Approach. Washington, DC: U.S. Environmental Protection Agency Office of Toxic Substances (560/6-87-002a), 1987.*

<http://ecoki.com>

# EARTH HOUR 2011 CELEBRATIONS IN THE MALDIVES

*Mohamed Naseeh*

The annual Earth Hour celebrations were carried out in the Maldives on 26th March 2011.

Several events were carried out throughout the day which included;

**A rally;** which started at 4:15pm along Ameene Magu near Indira Gandhi Memorial Hospital and ended near the Tsunami Monument. Around 250 people took part in this rally.



**“Vesheege Govaalun”;** which took place just after the above mentioned rally, during which some of the participants of the rally spoke out their views about the risks of climate change and other environmental issues faced by the Maldives.



**Traditional Music Show;** which started at “Hiyfaseyha Maidhaan” (Artificial Beach) area at about 8:10pm and went on until midnight.



*continued on page 4*

**Earth Hour;** the main event of the day – began at 8:30pm and ended at 9:30pm during which lights were turned off at government offices, businesses, schools and homes, etc.



**Activities at Schools;** a number of schools of Male' carried out various activities to celebrate Earth Hour.



## WORKSHOP RELATED TO THE SECOND NATIONAL COMMUNICATION TO THE UNFCCC HELD

A stakeholder workshop which was composed of Government ministries, regulatory bodies and civil societies, was held on 2nd March 2011 in Hakuraa Maalan at Dharubaaruge to discuss the formulation of

the project document required for the financing of the Second National Communication to be submitted to the United Nations Framework Convention on Climate Change (UNFCCC).



The workshop was inaugurated by the Minister of State for Housing and Environment, Dr. Mohamed Shareef. In his opening speech, he highlighted the National Communications as an important strategic tool to help countries align their interests and priorities to the overall goals of the UNFCCC. He also mentioned that they are also the principal instruments for highlighting and disseminating climate change concerns to a wider national audience.

The main elements of the national communications are information regarding emissions as well as its reductions, and also details of the activities the Party has undertaken to implement the UNFCCC. These elements are core for both Annex1 and non-Annex1 Parties to the UNFCCC.

Maldives comes under non-Annex1 parties and the First National Communication was submitted by the Maldives in November 2001. The preparation for the Second National Communication is currently underway and the ICF Marbek will be assisting in developing the preparatory project documents required to secure financing of the Second National Communication.



The outcome of this workshop will guide the whole National Communication process. The overall objective of this stakeholder workshop is to present findings and

*continued on page 5*

outcomes of the past three day consultations that were carried out by the project consultant. Also, this workshop will provide an opportunity to discuss the findings and fine tune the structure of the Second National Communication.

The celebrations, led by the Scouts Association of Maldives, followed this year's official theme "Go Beyond The Hour" – encouraging the community to plan environmental activities throughout the year instead of only switching off lights during Earth Hour.

## A LOOK AT THE INCREASING PETROL PRICES IN THE MALDIVES

*Mohamed Naseeh*

Date	Price	Increase	% Increase
28 March 2011	MRF 13.53	MRF 0.86	6.79%
15 March 2011	MRF 12.67	MRF 0.87	7.37%
22 February 2011	MRF 11.80	MRF 0.55	4.89%
09 February 2011	MRF 11.25	MRF 0.65	6.13%
December 2010	MRF 10.60	-	-
08 April 2010	MRF 10.65	MRF 0.60	5.97%
22 March 2010	MRF 10.05	MRF 0.30	3.08%
Before 22 March 2010	MRF 09.75	-	-

Source: <http://mvpetrol.wordpress.com>

## THREATS AND CURES FOR A CLIMATE STRUCK DESTINATION AN OUTLINE

*Maeed Mohamed Zahir (Ecocare Maldives)*

The Maldives contributes less than 0.01% of the global Green House Gas emissions; even so the country is one of those that will be affected the most due to the Global

Climate Change.

Land loss and Beach erosion; Over 80% of the land area is less than 1 m above mean sea-level. 50% of all inhabited islands and 45% of tourist resorts face varying degrees of beach erosion. Note that even a rise of 1 m of average sea-level will submerge this country.

Infrastructural damage; all infrastructural activities, industries and settlements lie close to the shoreline. Sea-level rise poses a great threat to the existence of these structures. The Male' International Airport for example which is located in the Hulhule' Island, has a runway which is only 1.2 m above mean sea-level.

Damage to coral reef; The Maldives is basically surrounded by coral reefs. It not only provides protection to the islands but also is very much a part of the economic activities in the country. These coral reefs attract a lot of divers to come and explore the Maldives while fishing, a major livelihood source for the locals in Maldives is associated with these reefs. Corals are sensitive to changes in sea surface temperatures. Unusual high temperatures in 1998 caused mass coral bleaching in the central regions of the Maldives and it still remains a threat that such unusual temperatures may lead to the bleaching of more corals.

Water resources; Most of the Maldivian population depends on the ground water and rain water as source of fresh water. Both are highly at the risk of Climate Change. As Maldivian Islands are low lying, the rise in sea-levels would force salt water intrusions into fresh water lens.

Human health; It should be noted that although Malaria has been eradicated from the Maldives, with climate change there might be a threat for malaria outbreaks.

occurring in the country. Other waterborne diseases such as Diarrhea are also feared as some islands have poor sanitation management. IPCC regional climate scenarios estimated that the air temperatures in the region may rise by 2-3.8 degree Celsius. By year 2100, this will lead to heat stresses and poor urban air quality in the future. Also this increases threat of skin cancer.

Maldives is of course a very unique country. We have our own language, called Dhivehi. We have our own script, called Thaana. Our language is spoken and written only in the Maldives by Maldivians. We have our own unique cultures and traditions and we have a very interesting and long history.



If Climate change and sea-level rise cause our islands to be washed off the surface of the world, then it's not only a country that will die. It's an entire nation, a language, a culture, a tradition and a history that will be washed off the surface of this planet. It will all be destroyed and lost.

To reduce impacts of global warming and for the Maldives to survive as a nation we need everyone to become united and work for a cleaner solution, a greener and a more sustainable solution. World leaders and politicians need to give into the demands of the earth. Economics and business should not be the first priority when it comes to Mother Nature and planet earth. Earth should come first!

If there is a will there is always a way. We need more world leaders to become committed to the climate cause. We need to reduce the amount of green house gases we produce. We need to limit the amount of energy we consume. We need to learn to reuse, recycle and reduce.

Large economies of the world, those who also have the means and capability to play a major role in reducing the amounts of Green House Gases, should cut down their emission rates. These developed economies need to help countries like Maldives in adaptation measures as well as provide us, the developing countries means and resources for a more sustainable development.

It should be remembered that today it may be the Maldives, Kiribati or some other low lying island state that is in the frontline of climate change and the raising seas. But remember that others are to follow sooner if solid and concrete action is not taken. We need the world to take protective action now.

Every single little act of conservation; every time you switch off an unwanted electric appliance, every time you use a recycled material, every time you walk instead.



# ENVIRONMENT DEPARTMENT TAKES PART IN ENVIRONS FAIR 2011

*Mohamed Naseeh*



Environment Department has taken part in this year's Environ's Fair 2011.

The two day fair, which was held from 22nd to 23rd March was organized by Environ's (environment club of Centre for Higher Secondary Education) and was inaugurated at a ceremony held at Sultan Park by Dr. Musthafa Lutfy, the Chancellor of Maldives National University.

A number of activities including a public perception survey, information dissipation on Earth Hour celebrations and screening of environmental documentaries and presentations were carried out at the ministry stall.



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*continued on page 7*