

## Environmental Disaster

# Why not a global research centre in Bangladesh?

DR. M. ANWARUL HUQUE

LIVING in total harmony with the environment is the pre-condition to survival of the human society. But modernisation, luxury, anticipated long term gains for families and next generations to shot-sighted national prosperity and development gains generally lead to over exploitation of natural resources inflicting damages. This mostly tantamount to adding fuel to the fire, i.e., geo-meteorological processes against the normal habitat or ecosystem; which are otherwise containable with judicious uses and interferences within regenerating limits--and thereby maintaining harmony with the environment.

Bangladesh, a small land mass almost at sea level and a unique deltaic plain with about 164 million population, has now become the world's most ecologically vulnerable spot, susceptible to almost all kinds of disasters in ever increasing frequency, intensity and severity because of global warming.

Bangladesh is also one of the worst scenario countries, where environmental damages are rampant in terms of hill cutting, river filling, deforestation, pollution, over allocation of land for industry/office/house as well as lack of adherence to the laws of the land. Whereas, Bangladesh, besides its resilient people of merit, has all the potentials, with its land and water being highly productive. Thus, Bangladesh could become a role model, through demonstration of adherence to laws for upholding the balance of natural ecosystem, and evolving relevant knowledge and technologies through research. Here the world-wide successful model in cholera research, the International Centre for Diarrhoeal Disease Research, Bangladesh, could be an eye opener for the world community.

*The proposed GEDRC will require, besides environmental manpower of international expertise, all kinds of generous assistance from international community, like Japan, to face the challenges of global consequences, so as to put the research centre on a sound foundation, like the ICDDR,B.*

Accordingly, the Daily Star news items: "Japan to Help Build Environment Training Centre" in Bangladesh (October 5, 2010), and Prime Minister's "Tougher Stance Against Environmental Terrorists" (October 13, 2010), have been very timely and encouraging. These demonstrate government's commitment, and Japan's recognition of Bangladesh's environmental vulnerability and urgency for capacity building.

### Ideal venue for research and training

Bangladesh possesses almost all geo-meteorological characteristics, comprised of alluvial plain land, marsh lands, mountains, hills, forests, sea coasts, offshore islands, etc. along with all features of vulnerability: drought, downpour, recurrent flooding, inundation, cyclone, tornado, storms, erosion, earth quakes, etc. with radical changes in seasonal features. It also provides almost all types of disaster resilient people living in mud/thatched houses, and diverse spots for research and training throughout the year. Thus Bangladesh, with all the environmental chronicle of woes for itself, is also an eye opener and an ideal venue for evolving the knowledge and technology, essential for combating disasters, while re-recognizing the need for co-habitation with nature.

### Indispensability of a global research centre

The merit of acquiring information on the spot of natural phenomenon-based comprehensive knowledge and experience, with/out secondary and tertiary time-series data, is likely to be the near panacea of all possible remedies for disasters. And dealing with the ever-increasing dimension of environmental hazards demands evolving essential knowledge and technology based on the real ground scenarios, which will be more effective in reducing loss of life and properties, and post-disaster sufferings, besides loss of education of millions of children annually.

Diverse disaster spots in a tiny land mass also pave way for varieties of training on emerging knowledge and technology through research; and thereby facilitating policy-planning and strategies for actions ahead of, during and post disaster periods.

Under these realities, Bangladesh would be the most suitable venue for a "Global Environmental Disaster Research Centre (GEDRC)" with diverse ecological hot spots-based "Outreach Work Stations" across the world, all to be run by international experts. It will have world-wide partnership arrangements, since both the developed and developing countries have the same stake in the climatic



AMIRUL RAJIV

### Cyclone devastation in Bangladesh.

challenges as a part and parcel of the global ecosystem, having highly dynamic impact on the socio-economic processes. That means, no country will ultimately be able to escape the difficulties and hardships of other countries, and the responsibilities thereof.

Capitalisation on the real ground information, indigenous knowledge, skills and experiences of the people, logistics and support services, volunteers, etc. are essential for enriching the world community with the appropriate modern know how, so as to cope with the increasing dire consequences. The advantages of combining the world-wide disaster types and spot specific research outputs in innovating newer adoptable concepts and processes will lead to achieving sustainable global benefits. The proposed GEDRC will re-

quire, besides environmental manpower of international expertise, all kinds of generous assistance from international community, like Japan, to face the challenges of global consequences, so as to put the research centre on a sound foundation, like the ICDDR,B.

### Charity must begin at home

The essence of dealing with the environmental disaster is the recognition of 'oneness of man and nature' and the underlying processes. Human being, because of its supremacy of intelligence, established its control, in many respects, over the nature, has artificial houses to have luxury of comfortable living, considering itself alienated from the nature; and is using natural components irrationally, without any consideration for ultimate consequences. Thus human civilization has forgotten

that there is a limit as to how much the global ecosystem can bear the brunts of manmade negative implications. Bangladesh citizens are in no way different from the rest of mankind.

Thus we need to convince the world community that we have put into effect all corrective measures, essential for ideal conservation of both "natural and artificial environment", in all terms of uses of land, water, air and biodiversity; including adjustments in meeting demands of ever increasing population. This will require enacting/enforcing laws as required, embodying, among others, a mandatory "unitary land space utilisation policy", limiting luxury/comfort for all practical purposes.

Prof Dr M Anwarul Huque, former DG, NAEM, MOE is an ecosystem specialist; E-mail: manwarulhuque@gmail.com

# Ship bilge water degrading marine environment

MD ABU SAYED

BILGE water is one of the causes for marine pollution. Untreated bilge water can contain oil, gasoline, solvents, detergents, chemicals, and more and when discharged in to the sea can negatively affect biodiversity, food, and health in coastal areas, oceans and waterways.

A bilge, also called bilge well is the lowest space of the ship. It is the area where two sides of the ship meet. The corners of the lowest compartment of the ship constitute a bilge, where all the bilge water often gets accumulated with an opaque black liquid. The depth and the number of bilge wells depends on the ship's size, its capacity and the amount of bilge water it generates. A bilge well is the most important residual collection tank of the entire engine room.

Bilge water is not exactly water but a mixture of variety of hazardous and non hazardous substances. It's a mixture of fresh water, sea water, oil, sludge, lubricants, chemicals, various inorganic salts, and metals (e.g., arsenic, copper, chromium, lead, and mercury) and also has a foul odor. It is often referred to as oily waste.

Bilge wells are helpful to store this contaminated water but can sometimes be a threat to the engine room. If the bilge wells overflow it could cause a rise in the level of water up to or above the floor plates. This could lead to accidents, emergency situations or even disturbance in the stability of the ship and also create the hazards to ship's crew from oil vapours. For this reasons noxious bilge water needs to be pumped out periodically with the help of bilge pumps to maintain the stability of the ship and mitigate the hazards from vapours. A large ship can accumulate as much as 8 metric tons of bilge water every 24 hours of operation. When a ship is in operation

*Most of the ship operators are often violating the existing MARPOL regulations regarding oil and oily residues discharges and are often degrading the sea environment. Each participating country adopts the MARPOL Regulations as a part of its national laws. Each country has a law enforcement agency that can arrest and detain MARPOL Regulation violators.*



Bilge well with highly polluted bilge water.

untreated bilge water is often released in to the open sea and coastal areas. During ship dismantling activities, too, bilge water is often released in different ways to the sea. When released into the environment, it may cause widespread pollution of water and coastal areas, and adversely affect human beings through the consumption of contaminated water or fish. Diesel and petrol in the bilge

water are particularly toxic, but lubricant and hydraulic oils and metals are also very damaging. When a major oil spill happens in the harbour or ocean, most marine pollution authorities are usually quick to respond to clean these up. But small spills resulting from careless refueling or pumping oily bilge water overboard can go unnoticed even though they are a major cause of marine pollution. If this

water is released to the port, it can mean a potential threat to the water quality.

Since the toxins prevalent in bilge water pose a significant threat to fish, wildlife, and humans even in small concentrations, untreated bilge water is prohibited from being discharged into the sea without treatment. Oily water separators must be used to extract the accumulated oil to be incinerated, reused, or offloaded in port safely. If a separator, which is normally used to extract the oil, is malfunctioning or deliberately bypassed, then contaminated bilge water could be discharged directly into the ocean.

However, in the event that these pollutants are present at elevated concentrations in discharged bilge water, there may be potential to serious impacts on human health, environment and marine life in different ways:

- Bilge water may contain metals which generally cannot be removed through treatment. Metals, if ingested, can cause various human health problems such as lead poisoning and cancer. Additionally, consumption of contaminated seafood has resulted in exposure exceeding recommended safe levels.
- Bilge water may contain toxic organics, such as solvents and polychlorinated biphenyls (PCBs), which can be cancer-causing and lead to other serious ailments, such as kidney and liver damage, anemia, and heart failure. Discharges of toxic organics can also result in the release of poisonous gas, which occurs most often when acidic wastes react with other wastes in the discharge.
- Bilge water may contain oils and fuels which can poison fish and other marine organ-

isms. Since these pollutants can float on the water's surface and be blown into the shoreline, they can physically cover plants and small animals thereby interfering with plant life cycles and the animal's respiration as well as marine ecosystems. Birds, fish, and other animals are known to abandon nesting areas soiled by pollution.

The MARPOL Convention, adopted on 2 November 1973, is an international convention for the protection of the marine environment, which is in force world-wide. So in order to avoid pollution by oil, cargo, and garbage the IMO introduced MARPOL regulations on which the discharge criteria are mentioned. The MARPOL 73/78 Convention is a frame convention with six annexes containing detailed regulations regarding permissible discharges, equipment on board ships, etc. Among the six annexes, Annex I (in force since 2 October 1983) deals with structural requirements and imposes strict limitations on oil and oily residues discharges.

MARPOL regulations state that bilge water cannot be directly pumped out into the sea. For this reason, bilge water is first passed through an oily water separator where the level of suspended oil particles in the mixture is significantly brought down. When the oil particles in the mixture comes down to the permissible limit (below 15 ppm), it is allowed to be thrown overboard but only when the ship is en route.

Oil pollution due to discharge of oily bilge water can lead to severe penalties. To avoid these penalties and to prevent further oil pollution here are some preventive measures that will help in keeping the discharged bilge water clean. Following these simple preventive mea-

asures will not only result in clean bilges but will also result in a green earth.

- The engine of the boat should be maintained properly to avoid fuel or oil leaks. Oil filters should also be changed often.
- Try to stop any rain or sea water leaking into the boat, so there is less need to pump out any water.
- Floating oil, if any, should be soaked up with an absorbent before pumping the bilge. An absorbent pad or a drip tray should also be kept under the engine.
- During bilge cleaning do not mix detergents with oily bilge water as they can prove even more toxic than the oil alone and is very difficult to clean up. Instead, use a biodegradable bilge cleaner. This bilge cleaner is environmentally friendly and will not cause marine pollution.
- Do not pump oily bilge water overboard – use a marine bilge pump out service where available. Many marinas and ports have facilities where old bilge water can be disposed of properly.

Most of the ship operators are often violating the existing MARPOL regulations regarding oil and oily residues discharges and are often degrading the sea environment. Each participating country adopts the MARPOL Regulations as a part of its national laws. Each country has a law enforcement agency that can arrest and detain MARPOL Regulation violators. Marine pollution should be mitigated to make eco-friendly marine environment and stern action should be taken who are violating the environmental law.

Md. Abu Sayed is an agriculturalist and environmentalist. email-asayedmas@yahoo.com