

How safe is our bottled water?

It is time that our Ministry of Health and other relevant authorities make a serious effort to combat this deteriorating situation. As of today, reports suggest that only one member of the Association of Bangladesh Mineral and Purified Drinking Water Manufacturers enjoy ISO 22000 certification and membership of the Asia and Middle East Bottled Water Association. Steps need to be taken to ensure that other bottlers improve the quality of their product and eventually also achieve the desired certification status.

MUHAMMAD ZAMIR

I was watching a television programme the other day on adulteration of food items in Dhaka and elsewhere in our country. It featured a former Magistrate who gained enormous respect for his dedicated effort aimed at combating this pernicious practice. Participants discussed about the use of different toxic materials and chemical agents that were contaminating food items. This included the use of deadly formalin for the preservation of fruit, fresh fish and sometimes even milk. Mention was also made of the use of the insecticide DDT by some producers of dried fish. Towards the end of the programme some footage was also shown about how some people in the Sadarghat

and Chowk Bazar areas in Dhaka had been caught while filling water directly from the tap into plastic containers with forged labels. Apparently they were subsequently sealing these bottles with unsafe water and marketing them as safe drinking water to unwary customers.

The programme, which included a lawyer, noted that there were existing criminal legal provisions with regard to the use of such illegal substances. He pointed out that the law was severe in this regard and that punishment not only included fines but also imprisonment if so required. It was also stated that mobile courts had handed down such penalties. Several reports, both in the print as well as in the electronic media, have testified of such punishment being meted out. It was however shocking and disappointing to

find out from the television programme that despite convictions, many of those charged with such offences were found to be repeat offenders, who continued to disregard existing legal provisions and health standards. It was presumed that they were greasing the palms of health and law and order inspectors to survive.

The segment on the selling of contaminated bottled water was most disturbing. This has supposedly assumed serious proportions given our increasing reliance on such a source to avoid dehydration. In the absence of boiled water and not sure of the piped water supply, the public look upon sealed plastic bottle containers as a safe means for quenching their thirst amid hot and humid conditions.

This consumer vulnerability factor persuaded me to carry out my own investigation. I was surprised with the revealed information.

Records indicated that the first bottled water plant was established in 1990 in Dhaka. Thereafter, the increasing pace of urbanization and of visitors from abroad (particularly migrant workers and non-resident Bangladeshis coming back to Bangladesh on holidays), the growth of the expatriate population, and lack of confidence in the cleanliness of piped potable WASA water supplies facilitated the establishment of a number of bottling plants.

All these plants were concentrated in and around the capital city of Dhaka and

the port city of Chittagong. Several entrepreneurial bottlers also gradually manifested themselves in smaller Divisional and District towns.

Initially, those in Dhaka and Chittagong, catering for a combined population of about sixteen million, used small bottles of varying sizes ranging from 0.5 liter and 1.00 liter to 2.00 liters. These bottles were made of food grade PVC. Subsequently, bottles made of PET were introduced. Gradually the bottle's introduced jars of 20 liters made of PC to supply water to large consumers/offices. Those in smaller towns sold their water only in 20 liter jars. Inquiry also revealed that there are now about 200 bottlers of water in the country and of them only 15 are active in supplying water in smaller PET bottles.

The possibility of profit being very high in this relatively unregulated sector has led to the number of entrepreneurs in this field growing in geometrical proportions. As expected, all of them also claim that their water meets the standard fixed by the Bangladesh Standards and Testing Institution (BSTI).

It is however quite clear that many of those supplying water in larger containers do not play by the Code and pass off ordinary tap water as boiled and filtered water or even mineral spring water. Their market has grown because they tend to supply water at a relatively cheaper rate. Magistrates, on a regular basis have dis-

covered that most of these suppliers do not possess the required processing equipment for purifying water or appropriate testing laboratories. Consequently, many offices, tea stalls, restaurants and small food shops on the wayside availing of such cheaper water bought in larger volumes end up spreading gastro-intestinal diseases.

We need to remember that pure drinking water and natural mineral water have to be free from all pathogenic bacteria and micro-organisms like algae, zooplanktons, parasites and toxin-producing organisms. It must also be understood that the chemical composition of drinking water and natural mineral water are different. There are also differences in the presence of mineral compounds and trace elements due to varying sources for drinking water and in its treatment. Bacteriological purity however has to be ensured as a concomitant factor.

The BSTI is supposed to be our watchdog for this sensitive area. It is their duty to ensure that the water contained in bottles have the necessary elements outlined in the wrapper around the bottle. Unfortunately, the BSTI continues to fail the consumer with regard to the performance of their expected duties. This authority rarely carries out inspections and allegations of corruption are common against this institution.

Responding to such charges of ineffi-

ciency and graft, BSTI has claimed that they are under-staffed, under-resourced and have a weak mechanism for implementation. They have alleged that this weakness is taken advantage of by unscrupulous producers. Such an explanation is totally unacceptable.

It is time that our Ministry of Health and other relevant authorities make a serious effort to combat this deteriorating situation. As of today, reports suggest that only one member of the Association of Bangladesh Mineral and Purified Drinking Water Manufacturers enjoy ISO 22000 certification and membership of the Asia and Middle East Bottled Water Association. Steps need to be taken to ensure that other bottlers improve the quality of their product and eventually also achieve the desired certification status.

We are talking here about a critical aspect of our daily life that involves the future of our children. This problem has to be addressed without delay. I have written earlier in this column about the need to form a Water Consumers Association and for stricter regulation of this industry. Obviously this is not taking place. Such an Association could be used to protect our rights legally and also ensure strict compliance with existing standards.

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Marine accidents: Escalating concern

The high frequency of launch accidents, which take away a lot of lives every year, following almost the same chain of faults, proves that we learned little from the past. It's high time to gallop with all our might to declassify the evil acts behind the accidents and discard them in order to secure a safe marine transport system.

MOHAMMAD TANVIR HOSSAIN, SUBIR DAS and ZOBAIR IBN AWAL

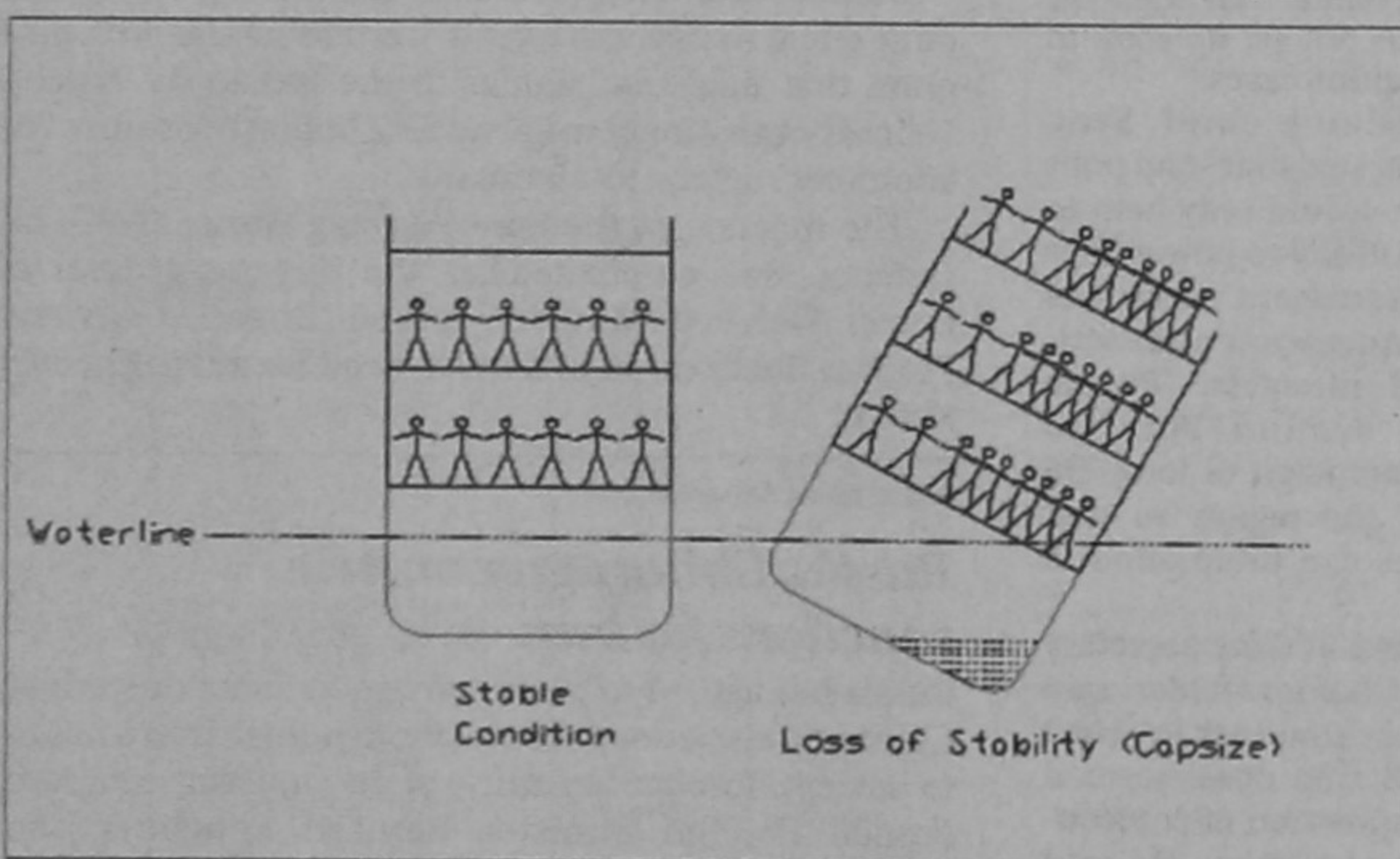
IT'S like a haunted region where people's lives are consigned to fate and mass people's deaths are consigned to oblivion. Every year, hundreds of lives are lost in launch disasters and the death tolls are simply archived. This year, MV Koko-4 capsized on November 27, with a high casualty.

News reports revealed some of the crucial issues behind the mishap. There was not enough depth of river as the lion's share of the capsized vessel remained above the waterline. Moreover, the underwater portion of the vessel was

inadequate. The launch suffered bottom rupture before it overturned. And the issue of utmost importance was overloading beyond its capacity.

Overloading is disastrous in some cases as it triggers the top-level system failures, like capsizing. Inadequate number of transports, defying rules and regulations, negligence of the authorities and owners' lust for lofty profits are the major factors working behind overloading. Disaster lurks while the problem of overloading is associated with faulty structures, natural cataclysms, inadequate navigability or crowding of people to one side of the vessel.

Crowd over roof is menacing as mass



Crowd over roof and in one side of the vessels is menacing.

transfer over upper decks profoundly harms the stability of a vessel. Again, crowding to the areas closer to edges of the vessel makes it tilt and may bring disaster.

The problem of structural faults is liable to the investigation approach of the authorities. The design of a ship is submitted to them for approval. But it is hardly investigated whether the construction of a vessel is done following the approved design or not. So the administration should survey the vessels and check the structure with the actual plan. If any fault is detected by the authorities, the vessel may be sent for repairing under the supervision of experts and the cost realised from the owner. Withdrawing the permit of a ship is a negative approach and the people have to suffer for this in return.

Following the same dominoes, accidents are taking place in our country causing heart-tearing casualties for decades, but sadly enough, we remain simply puppet spectators. The capsizing of MV Koko-4 on November 27 also followed the same dominoes and raised a death toll of 76 (according to The Daily Star, December 1, 2009.). She started from Sadarghat with over one thousand passengers on board at 11 a.m. and capsized near Bhola mainly due to crowding of people to one side. A large number of people gathered in one side to collect tickets before disembarking, which caused the vessel to tilt due to a mass imbalance in port and starboard sides.

Perhaps we have reached a gridlock. We are likely to be firmly entangled with the tentacles of a gigantic octopus. When we sever a tentacle, we get snared with another. Let us try to illuminate two facts. One is, during Eid, a huge number of people flock to their own regions from Dhaka.

As Dhaka is the core point of almost all national activities, people from all parts

of the country come here, especially for employment. During Eid, these people rush to their regions to celebrate the long-awaited festival with their families. This triggers overloading in passenger vessels keeping those vulnerable to accident.

The number of passenger vessels is seemingly too inadequate for the journey of this large number of people. To solve this problem, the number of passenger vessels in some routes should be increased. The second fact is if new vessels are constructed and launched in order to reduce the extra pressure, these will not get enough passengers throughout the year. The system would not be feasible or viable. So it's never easy to escape the problem of overloading because it is intensely raveled with our national policy and socio-economic circumstances. Then there are not sufficient and proper life-supporting appliances for the estimated capacity of the vessels let alone for the overloaded condition.

Let us put the cursor on inadequate navigability which is profoundly caused by an extreme siltation rate in our rivers. Soil erosion due to unplanned construction is a key-factor to the high siltation rate. Alluvial deposition lessens depth of rivers keeping the ships prone to grounding. Severe grounding may produce bottom rupture and subsequent water ingress, which may lead the ship to sinking or capsizing. MV Koko-4 also had bottom rupture and water ingress due to powered grounding, which contributed much to its capsizing.

Here, a point has been skipped. The ground of the littoral areas of a river in our country is usually the soft layer of alluvial deposition. The overloaded launch didn't hit a hard-rock ground but a soft bed of sediments. So, bottom rupture of a launch is unexpected after hitting the ground of a littoral area. It is only possible when the under-water portion is made of impure materials. It may also associate washing



away of paint on the surface exposed to water and subsequent corrosion of the surface materials.

Likely to the causes of marine accidents, which follow a common set of dominoes, the aftermath of accidents also follow a common set of dominoes. Print and electronic media keep on publishing or broadcasting news on mishaps, the top authorities convey condolence to the bereaved families, security gets beefed up for one week and so forth. Our compassion for the departed souls and the bereaved families leaps to the peak point when the news on accident is broadcasted. But the wave of emotion meets its trough in the course of two or three days. We are in front of the labyrinth of ways and can't decide what to do.

The paramount step that should be taken by the government to meet the aftermath of an accident is to confirm proper investigation. The owners who allow people to embark vessels, even after exceeding two or three times of their capacity, or run unfit or obsolete vessels vulnerable to capsizing for their covet-

ousness, looking for hefty profits, should not go unpunished. Running of unfit or obsolete vessels is also ensnared with some other issues like paucity of surveyors and corruption in this sector. The ratio of the number of vessels and the number of surveyors is astounding. It is indeed surprising to know that there are very few (less than the fingers in one hand) surveyors who survey more than four thousand vessels annually -- this is quite impossible even for a wizard!

Despite the skein of problems like overloading, faulty structures, lack of navigability and so forth, only one passenger vessel among those running with passengers several times of their capacities during the eve of the Eid, had capsized. The scenario might appear in more diabolical form than we observed. It's high time to gallop with all our might to declassify the evil acts behind the accidents and discard them in order to secure a safe marine transport system.

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Solar power as a prime energy source in Bangladesh?

Current technology and economics of solar power make them unsuitable for one of the most densely populated and yet one of the poorest countries of the world like Bangladesh. It is better to focus on the labour-intensive components of the solar power system to build an exportable product instead of becoming an un-witty consumer.

SHABIR A. BASHAR

THE Daily Star reported on December 14, 2009 that a company has been tasked with setting up a 20-25kW solar power supply to Bangladesh Bank at a cost of Tk.1 Crore. I question the wisdom of this investment based on current energy costs in the market and the life expectancy of such a system.

Energy Bangla, (www.EnergyBangla.com) reports that the cost of electrical energy to the con-

sumer is Tk.5.50 per kilowatt-hour. If we assume that banks operate 8 hrs/day, 5 days/week, 48 weeks/year, their annual electricity bill for 22.5 kilowatts comes to Tk. 2,37,600. Dividing Tk.1 Crore by this figure gives us the number of years it will take for it to pay for itself: 42 years. The payback will be even longer if maintenance and other operational costs are taken into account. The GreenEcon website (www.GreenEcon.net) -- dedicated to understanding the economics of alternative energies -- is a good starting point for your readers to verify mv

claims.

A 2002 study by R. Khan et al of BUET found the daily sunlight hours in Bangladesh to range from 10 to 7 hours; they further reduced this by 54% (to 4.6 hours) to account for rainfall, cloud, fog and dust over the solar panels; in the US, located a further 20 degrees north of the equator, the peak sunlight hour is 3.5. 10% efficiency is further lost during the necessary DC to AC conversion, reducing the median 22.5kW capacity to 20kW.

Multiplying the 4.6 hours by 20kW, we see that this system will deliver 92kW hours/day or 33.5 MW hours/year. In its typical 20 year lifespan, the system will deliver 670MW hours of energy. Dividing 670MW hours by its cost of Tk 1 Crore, we get a cost of Tk. 15/kW hour. In comparison, energy costs are Tk.0.42/kW hour from coal; Tk.3.5/kW hour from oil and Tk.2.1/kW hour from gas.

About 93W/sq. ft of solar energy falls on the surface of the earth. Accounting for all the conversion losses, we get 10W/sq. ft. The reported 22.5kW system

will thus occupy 2,250 sq. ft. or a spacious apartment. An office with an air conditioner, couple of light bulbs and a computer will easily consume 1.5kW. Tk.1 Crore will only serve 15 offices! The company representative boasted that up to 500MW can be produced by 2015; this will require 50 million sq. ft. or the equivalent of 430 football stadiums.

What about Bangladesh's future energy and productivity needs? The per capita energy consumption is a reasonable indicator of a country's productivity. The International Energy Agency and World Bank data for 2005 shows this to be 1230kWhr for Bangladesh. Figures for India, Thailand, UK and the US are 3,860kWhr, 14,570kWhr, 48,650kWhr and 99,620kWhr, respectively. It is obvious then, in order to transition from a poor agrarian developing nation to an industrialised middle-income country, Bangladesh needs to build its energy capacity ten-to-twenty times. If the future needs were to be met by solar power alone, this would require 27,400

MW panel systems. These would need a thousand square miles of space. With a current population density of almost 4000/square mile in Bangladesh, they would displace 4 million people and cost Tk.1.2 million crores -- equivalent to US\$174 trillion, or 15 times the current US national debt!

A typical solar power system cost breakdown is as follows: solar panels 63%; batteries 25%; DC to AC converters 9% and 3% for installation in Bangladesh. With advances in manufacturing, the solar panel production cost will drop, while with R&D in design and material science, low-cost cell efficiency will rise above 15%. These efforts require annual investments to the tune of billions of dollars. While the US and Europe are the biggest R&D contributors, China is taking manufacturing to the next level.

But why is Bangladesh investing in a technology that costs about 7 times more than conventional energy? Why is tax money being thrown at a product whose life expectancy is half (20 years) of

the payback period (42 years)? Given Bangladesh's inability to manufacture solar panels, isn't this tantamount to wasting foreign exchange that could be better spent on upgrading the national grid transmission lines to build the much needed power distribution capacity? The local company also happens to be a supplier of the requisite batteries for which they provide a 2yr warranty; since batteries constitute 25% of cost, who will pay the additional Tk.12.5 Lakhs annually?

Current technology and economics of solar power make them unsuitable for one of the most densely populated and yet one of the poorest countries of the world like Bangladesh. It is better to focus on the labour-intensive components of the solar power system to build an exportable product instead of becoming an un-witty consumer.

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