

EDITORIALLY SPEAKING !

Crisis, crisis, crisis. It is so unfortunate that our nation is facing crisis in almost every sphere of life. No doubt the whole world is badly hit by economic recession and financial crisis for the past few months but our crisis appears to be making of our own follies. We cannot absolve ourselves of the responsibility and could well have avoided these. Ours is mainly an agro based economy but our agriculture sector has been badly hit by water crisis, energy crisis and of late the fertilizer crisis. We boast of having largest irrigation system in the world but have no water for crops. We have power houses in public and private sector but not enough power to run tube wells or industry. We have fertilizer factories but farmers are running from pillar to post to get fertilizer for their crops. Recently we passed through the worst gas crisis which coupled with power crisis resulted in severe crisis in our main agro based industries viz., textile industry and sugar industry. The former is rather struggling for existence. Now we are hearing of garment industry also running into crisis. We have sacrificed large chunks of fertile agricultural lands towards establishment of industrial estates but due to lack of proper infrastructure, these could not flourish. Shall our country ever get out of this mess? Is it not a food for thought for us, engineers to think of some means to steer our country out of this situation which is full of crisis ?

Engr. Syed Mansoob Ali Zaidi Gets Life Membership of American Society of Civil Engineers (ASCE)

It is a matter of great pride and rejoicing for the Executive Council and the fraternity of Pakistan Engineering Congress to know that Engr. Syed Mansoob Ali Zaidi, P. E., F.ASCE, a Veteran Engineer, former Secretary Irrigation and Power Govt. of the Punjab, and presently Vice-President, of the Congress has been awarded "Life Membership" as well as "Life Member Lapel Pin" by American Society of Civil Engineers (ASCE) in recognition of his life time commitment to ASCE and the Civil Engineering profession.

The Executive Council and Members of Pakistan Engineering Congress hereby extend their sincerest congratulations to Engr. Syed Mansoob Ali Zaidi for this great distinction.

Prof. Dr. Syed Ali Rizwan Awarded Membership by A. C. I. Committee

Prof. Dr. Syed Ali Rizwan, Professor National University of Sciences and Technology, Islamabad and Vice-President Pakistan Engineering Congress has been appointed on the A.C.I. Committee 237 (Committee for Self-Compacting Concrete). He has won this position on the basis of his extensive research work and publications relating to the field of Concrete Technology and is the first Pakistani to have been taken on any A. C. I. Committee. Pakistan Engineering Congress extends felicitations and congratulations to Prof. Dr. Syed Ali Rizwan for this honour.

**Why Can't We Just Stop Drinking Bottled Water?
By Sloan Barnett, Huffington Post.**

We are spending fortunes on bottled water that may not even be any better than tap water.

Human beings are basically a watertight envelope filled with fluid and a few bony bits. We need water. Plus, it's great for your skin. But the main reason the bottled water industry has exploded over the last decade isn't because tap water is unsafe. It's because, with the market for soft drinks basically flat, beverage manufacturers needed a new growth industry. They piggy-backed the chic of bottled water sold in restaurants in places like Europe (where the quality of tap water can sometimes be iffy) onto health worries of all kinds and mounted large advertising campaigns, complete with pictures of snow-capped mountains, pristine streams, and healing mineral springs.

And we bought it. Big time. According to the International Council of Bottled Water Associations, in 2003, Americans spent nearly \$8 billion buying 24.5 million liters of bottled water. That's roughly 90 liters, or almost 24 gallons per person. The Earth Policy Institute says that figure has risen to more than 30 gallons in 2007 at a cost of \$9 billion."

So we are spending fortunes on bottled water that may not even be any better than tap water. Just last week the Environmental Working Group found that 10 popular brands of bottled water contained an average of 8 chemical pollutants in each and more than one-third of the chemicals found are not even regulated in bottled water. And here's the crazy thing: in some cases bottled water comes from the same place as tap water -- a public water supply!

Now let's talk planet. Nearly a quarter of water bottles are shipped across borders – in planes, in trucks, in boats – emitting greenhouse gasses along the way. In addition to all the oil that is required for shipping, the plastic that holds the water is derived from crude oil. That's a lot of oil. In fact, Americans' demand for bottled water requires more than 17 million barrels of oil per year!

So what's wrong with us? It's not as safe, it's bad for our planet and it's clearly more expensive. It's just become a nation wide nasty habit. So let's all start today and SAY NO to bottled water. Done. Finished. Never again. The alternatives? Go buy a water filter pitcher or install a water filter in your house. Break down and buy one of those metal water bottles -- I think that you'll find it's stylish these days to carry one around.

NEWater : From Sewage to Safe By : Cezar Tigno.

Singapore has taken recycling to a whole new level, in the process, securing safe, drinking water for its citizens for centuries to come.

Tapping an Unlikely Resource

The world can learn a thing or two on water recycling from Singapore. Faced with diminishing freshwater sources, its national water agency, the Public Utilities Board (PUB), has tapped an unlikely resource – used, dirty, down-the-toilet-bowl and sewage water.

Using reverse osmosis technology, Singapore's scientists have perfected the process of transforming sewage water into new, clean, safe drinking water. And since every corner of this bustling city is connected to a single sewerage system, Singapore will never run out of sewage water as long as its residents keep flushing.

Aptly branded NEWater, this reclaimed or recycled water is one of Singapore's "four national taps" or freshwater sources providing 7 % of the country's water demands. The other taps are :

- Local catchments, providing 50 % of water needs
- Imported water from Johor, Malaysia, supplying 33 % of water needs, made available through a 1961 agreement, and pumped through pipelines across the two-kilometer causeway separating the two countries
- Desalinated water, or converted seawater, addressing 10 % of water needs

NEWater is a product of stringent purification and treatment process capable of making sewage water clean, clear, and sparkling. PUB has even dared put NEWater into plastic bottles for public consumption.

Reclaiming Water : A Reality

Singapore is now a global city – a prime destination of tourists, world entrepreneurs, and hopeful migrants from its Asian neighbours since its successful emergence as an international financial hub after the 1997 Asian Financial Crisis. Its 4.5 million people consume about 300 million gallons of water per day. The lack of water in this small, multi-cultural, city-state could have serious repercussions. It was a good thing, then, that the country foresaw its freshwater sources problem as early as the 1970s.

PUB built a pilot water reclamation plant in 1974, but implementation plans were shelved because of huge costs and unreliable technology. It wasn't until 1998 that the project was

revived through a joint initiative between PUB and the Ministry of Environment and Water Resources.

The 1998 Singapore Water Reclamation Study (or NEWater Study) clinched the deal on NEWater as a raw water resource to supplement the country's water supply. With the agreement with Malaysia expiring in 2011 and water demands expected to rise to 400 million gallons a day by 2012, the development of NEWater is very timely.

Since 2003, four NEWater plants have been established, capable of meeting 15 % of the country's water needs. By 2010, NEWater can meet 30 % of water needs as the fifth and largest NEWater plant becomes operational.

Step-by-Step NEWater

Singapore's scientists are by no means miracle workers. It took three decades of research and hard work to perfect a multiple barrier water reclamation process.

The conventional wastewater treatment process serves as the first barrier, removing sludge and much of the solid contents of sewage water. Singapore's six Water Reclamation Plants that use the activated sludge process do the initial dirty job. Much of the treated water produced by these plants may already be used by some industries or for other non-potable uses. A great portion of this treated used water undergoes the NEWater production process, broken down as follows :

1. **Micro-filtration**, where treated, used water passes through fibers that work as microscopic filters, blocking the smallest of particles up to 0.2 microns in size. At this stage, suspended solids, most colloidal particles, bacteria, and protozoa are removed and turbidity is lowered to ensure a consistently good quality feed water and prevent clogging in the next stage.
2. **Reverse Osmosis**, which involves applying pressure for water to flow through a semi-permeable membrane that removes inorganic substances like heavy metals, nitrate, chloride, and sulfate, and organics such as disinfection by-products, aromatic hydrocarbons, pesticides, as well as viruses. The RO membrane has a pore size of 0.0001 microns and through this process, 95 percent of total dissolved solids can be removed.
3. **Ultraviolet Disinfection**, which serves as a safety measure to remove any bacteria or viruses that slipped through reverse osmosis, ensuring water purity. Some alkaline chemicals are added to restore the water's pH balance making it safe for drinking.

Water reclamation, as a practice backed by solid scientific principles, has been around since the 1930s, with the first water reclamation plant built in California. However, reclaimed water has only been used either for non-potable purposes, such as for agriculture, irrigation, and manufacturing, or for indirect potable use through injecting the water back to groundwater aquifers or catchments. In Singapore, NEWater was mainly used in water fabrication plants and other industries.

The process and the technology, however, continued to evolve and can now create safe water for drinking. US Military operations in the Middle East, for instance, relied on similarly-functioning devices called the ROWPUs (Reverse Osmosis Water Purification Units), which provided the US Army and Marine Corps their daily water needs in the desert.

But the country-wide application in Singapore is the first of its kind.

Search by : Mian Iftikhar Ahmed

The Play Pump Water System, the Water Problem

Access to clean drinking water is critical for human survival and is an essential ingredient for improving the lives of those living in poverty in developing countries. And yet :

- More than one billion people worldwide do not have access to clean water.
- Water-related diseases are the leading cause of death in the world, taking the lives of 6,000 people a day, and are responsible for 80 percent of all sickness in the world.
- 40 billion hours are lost annually to hauling water, a chore primarily undertaken by women and girls.

All this can change

A life-changing and life-saving invention – the PlayPump® water system -- can provide easy access to clean drinking water, bring joy to children, and lead to improvements in health, education, gender equality, and economic development.

The PlayPump systems are innovative, sustainable, patented water pumps powered by children at play. Installed near schools, the PlayPump system doubles as a water pump and a merry-go-round for children.

The PlayPump system also provides one of the only ways to reach rural and peri-urban communities with potentially life saving public health messages.

How the System Works

While children have fun spinning on the PlayPump merry-go-round (1), clean water is pumped (2) from underground (3) into a 2,500-liter tank (4), standing seven meters above the ground.

A simple tap (5) makes it easy for adults and children to draw water. Excess water is diverted from the storage tank back down into the borehole (6).

The water storage tank (7) provides a rare opportunity to advertise in outlying communities. All four sides of the tank are leased as billboards, with two sides for consumer advertising and the other two sides for health and educational messages. The revenue generated by this unique model pays for pump maintenance.

The design of the PlayPump water system makes it highly effective, easy to operate and very economical, keeping costs and maintenance to an absolute minimum.

Capable of producing up to 1,400 liters of water per hour at 16 rpm from a depth of 40 meters, it is effective up to a depth of 100 meters.

Benefits of the PlayPump® Water System

Access to clean drinking water is the critical first step for addressing a wide range of health, education, gender and economic issues. With access, children and their families live longer, healthier lives.

While the health benefits of a clean water supply are critical, other benefits flow from the PlayPump® water system as well. **Children are *playing and staying in school*** instead of hauling water. While they are having fun, children are learning self-confidence and interpersonal skills. Play stimulates bodies and minds.

Women benefit too, as they no longer risk injury from transporting heavy containers of water over great distances, and they can use the time saved to better care for their children and start small enterprises that bring additional food and income to their families.

The PlayPump system can increase awareness of how to reduce the spread of HIV/AIDS. Public health messages on PlayPump billboards promote healthy behaviors that limit the spread of HIV/AIDS in rural Africa. Also, in order for HIV infected people to remain healthy as long as possible, adequate water supplies and sanitary facilities are of the utmost importance. Clean water is needed to take medication.

In addition to helping to provide access to clean water, the PlayPump water system is uniquely sustainable and creates economic benefits. The 2,500-liter water tank provides a rare advertising opportunity in rural communities. On each PlayPump storage tank, Roundabout Outdoor leases two sides of the raised storage tank for consumer advertising and leases the other two sides for public health messaging.

Advertising revenue pays for pump maintenance for up to 10 years. Roundabout Outdoor trains local crews on the installation and maintenance, generating new jobs for local workers.
Search by : Engr. Mian Iftikhar Ahmad

**The Tide Is Changing on Bottled Water
By Wendy Williams, Prairie Writers Circle.**

It used to be chic to be seen at the gym with expensive bottled water. Now, the plastic throw-aways are a no-no.

I remember when the name of the game at my gym was pump 'n' swig. Weight lifters and treadmill sloggers routinely carried with their sweat towels expensive water in plastic bottles.

Drinking commercial water was the cool thing. In 2006, Americans bought 32.6 billion single-serving bottles of water, and another 34.6 billion larger bottles.

With a slew of brands for basically the same product, image marketers have pushed the envelope – the bottle itself. My favorite absurdity: "Bling H2O," with the motto "More than a Pretty Taste." You can buy this water in a "Limited Edition" frosted-glass bottle encrusted with crystals for \$40.

The surprising truth is that an estimated 25 to 40 percent of bottled water comes from public drinking reservoirs. Pepsico's Aquafina label shows high-peaked mountains, but the water is from municipal systems, including that of Ayer, Mass., a town next to a military base and a short drive from Boston. Coca-Cola's brand, Dasani, also uses municipal systems.

I remember a Dennis the Menace cartoon showing Dad, dazed and bleary-eyed at 3 a.m., holding out a glass of water. Dennis says, "That's bathroom water! I wanted kitchen water!"

It's all in the marketing.

At some restaurants, water sommeliers" have pushed \$75-a-bottle water for each course. I once took my husband for his birthday to a restaurant where the waiter asked if we would like our water bottled or – with curled lip – "native." That convinced us. We absolutely had to go local.

We still laugh about that.

For years, the joke's been on consumers. We spend all that money on water and plastic, and toss the plastic. It litters America from sea to bottle-bobbing sea.

"We estimate that fewer than 20 percent of those get recycled," says Betty McLaughlin, executive director of the Container Recycling Institute.

Elizabeth Royte, author of the highly readable *Bottlemania: How Water Went on Sale and Why We Bought It*, says America uses about 17 million barrels of oil each year to make plastic water bottles.

"If you have good tap water, if bottled water is redundant, why wouldn't you go for the low-impact option?" she asks. "Bring your water over to the Stairmaster in a reusable bottle."

That message finally seems to be getting through. Today I see the beginnings of a bottled-water backlash. At my gym, almost no one wants to be seen swigging from throw-away plastic anymore.

Some restaurants have abandoned bottled water. New York City's Italian restaurant Del Posto, where it's easy to drop hundreds of dollars on dinner for two, has a 61-page wine list with many bottles priced over \$1,000, but you can't buy bottled water at any price. Says one of the restaurant's owners: "To spend fossil fuel trucking water around the world is absurd."

At colleges nationwide, students take the "no bottled water" pledge. Realizing that spending taxpayer funds on bottled water is careless environmental stewardship, Illinois has canceled contracts for bottled water. The city governments of Fayetteville, Ark., and Albuquerque, N.M., won't buy the stuff. Chicago has a tax of 5 cents per bottle to cover disposal costs. Michigan may extend its 10-cent deposit on soft-drink bottles to bottled water.

For a while, bottled water had a good thing going. In 2006, the industry worldwide grew 7 percent in dollar sales. Some forecasters suggested 40 percent growth over the next five years.

But recently, those phenomenal growth rates have slowed worldwide.

"Bottled water sales have gone flat for the first time in 30 years, at both Coke and Pepsi," says ad executive Erik Yaverbaum, founder of Tappening, which encourages people to drink tap water. "I think people are realizing they are wasting money buying water that's the same as what comes from their tap."

If I'm going to the gym now, I drink a glass of water before I go. If I'm going on a long car trip, I fill up a clean glass jug. My mom did that. And we never went thirsty.

Courtesy by : Mian Iftikhar Ahmad

100 Ways You Can Improve The Environment

In your home – conserve energy

1. Clean or replace air filters on your air conditioning unit at least once a month.
2. If you have central air conditioning, do not close vents in unused rooms.
3. Lower the thermostat on your water heater to 120°.
4. Wrap your water heater in an insulated blanket.
5. Turn down or shut off your water heater when you will be away for extended periods.
6. Turn off unneeded lights even when leaving a room for a short time.
7. Set your refrigerator temperature at 36° to 38° and your freezer at 0° to 5°.

8. When using an oven, minimize door opening while it is in use ; it reduces oven temperature by 25° to 30° every time you open the door.
9. Clean the lint filter in your dryer after every load so that it uses less energy.
10. Unplug seldom used appliances.
11. Use a microwave whenever you can instead of a conventional oven or stove.
12. Wash cloths with warm or cold water instead of hot.
13. Reverse your indoor ceiling fans for summer and winter operations as recommended.
14. Turn off lights, computers and other appliances when not in use.
15. Purchase appliances and office equipment with the Energy Star label, old refrigerators, for example, use up to 50 % more electricity than newer models.
16. Only use electric appliances when you need them.
17. Use computer fluorescent light bulbs to save money and energy.
18. Keep your thermostat at 68° in winter and 78° in summer.
19. Keep your thermostat higher to summer and lower in winter when you are away from home.
20. Insulate your home as best as you can.
21. Install weather stripping around all doors and windows.
22. Shut off electrical equipment in the evening when you leave work.
23. Plant trees to shade your home.
24. Shade outside air conditioning units by trees or other means.
25. Replace old windows with energy efficient ones.
26. Use cold water instead of warm or hot water when possible.
27. Connect your outdoor lights to a timer.
28. Buy green electricity – electricity produced by low – or even zero-pollution facilities (NC Greenpower for North Carolina – www.greenpower.com)

In your home – reduce toxicity

29. Eliminate mercury from your home by purchasing items without mercury, and dispose of items containing mercury at an appropriate drop-off facility when necessary (e. g., old thermometers).
30. Learn about alternatives to household cleaning items that do not use hazardous chemicals.
31. Buy the right amount of paint for the job.
32. Review labels of household cleaners you use. Consider alternatives like baking soda, scouring pads, water or a little more elbow grease.
33. When no good alternatives exist to a toxic item, find the least amount required for an effective, sanitary result.
34. If you have an older home, have paint in your home tested for lead. If you have lead based paint, cover it with wall paper or other material instead of sanding it or burning it off.
35. Use traps instead of rat and mouse poisons and insects killers.
36. Have your home tested for radon.
37. Use cedar chips or aromatic herbs instead of mothballs.

In your yard

38. Avoid using leaf blowers and other dust-producing equipment.
39. Use an electric lawn mower instead of a gas-powered one.
40. Leave grass clippings on the yard – they decompose and return nutrients to the soil.
41. Use recycled wood chips as mulch to keep weeds down, retain moisture and prevent erosion.
42. Use only the required amount of fertilizer.
43. Minimize pesticide use.
44. Create a wildlife habitat in your yard.

45. Water grass early in the morning.
46. Rent or borrow items like ladders, chain saws, party decorations and others that are seldom used.
47. Take actions that use non-hazardous components (e. g., to ward off pests, plant marigolds in a garden instead of using pesticide).
48. Put leaves in a compost heap instead of burning them or throwing them away. Yard debris too large for your compost bin should be taken to a yard debris recycler.

In your office

49. Copy and print on both sides of paper.
50. Reuse items like envelopes, folders and paper clips.
51. Use mailer sheets for interoffice mail instead of an envelope.
52. Set up a bulletin board for memos instead of sending a copy to each employee.
53. Use e-mail instead of paper correspondence.
54. Use recycled paper.
55. Use discarded paper for scarp paper.
56. Encourage your school and / or company to print documents with soy-based inks, which are less toxic.
57. Use a ceramic coffee mug instead of a disposable cup.

Ways you can protect our air

58. Ask your employer to consider flexible work schedules or telecommuting.
59. Recycle printer cartridges.
60. Shut off electrical equipment in the evening when you leave work.
61. Report smoking vehicles to your local air agency.
62. Don't use your wood stove or fireplace when air quality is poor.
63. Avoid slow burning, smoldering fires. They produce the largest amount of pollution.
64. Burn seasoned wood – it burns cleaner than green wood.
65. Use solar power for home and water heating.
66. Use low-VOC or water-based paints, stains, finishes and paint strippers.
67. Purchase radial tires and keep them properly inflated for your vehicle.
68. Paint with brushes or rollers instead of using spray paints to minimize harmful emissions.
69. Ignite charcoal barbecues with an electric probe or other alternative to lighter fluid.
70. If you use a wood stove, use one sold after 1990. they are required to meet federal emissions standards and are more efficient and cleaner burning.
71. Walk or ride your bike instead of driving, wherever possible.
72. Join a carpool or vanpool to get to work.

Ways to use less water

73. Check and fix any water leaks.
74. Install water-saving devices on your faucets and toilets.
75. Don't wash dishes with the water running continuously.
76. Wash and dry only full loads of laundry and dishes.
77. Follow your community's water use restrictions or guidelines.
78. Install a low-flow shower head.
79. Replace old toilets with new ones that use a lot less water.
80. Turn off washing machine's water supply to prevent leaks.

Ways to protect our water

81. Re-vegetate or mulch disturbed soil as soon as possible.
82. Never dump anything down a storm drain.

83. Have your septic tank pumped and system inspected regularly.
84. Check your car for oil or other leaks, and recycle motor oil.
85. Take your car to a car wash instead of washing it in the driveway.
86. Learn about your watershed.

Create less trash

87. Buy items in bulk from loose bins when possible to reduce the packaging wasted.
88. Avoid products with several layers of packaging when only is sufficient. About 33 % of what we throw away is packaging.
89. Buy products that you can reuse.
90. Maintain and repair durable products instead of buying new ones.
91. Check reports for products that are easily repaired and have low breakdown rates.
92. Reuse items like bags and containers when possible.
93. Use cloth napkins instead of paper ones.
94. Use reusable plates and utensils instead of disposable ones.
95. Use reusable containers to store food instead of aluminum foil and cling wrap.
96. Shop with a canvas bag instead of using paper and plastic bags.
97. Buy rechargeable batteries for devices used frequently.
98. Reuse packaging cartons and shipping materials. Old newspapers make great packaging material.
99. Compost your vegetable scraps.
100. Buy used furniture – there is a surplus of it, and it is much cheaper than new furniture.

WELCOME TO NEW MEMBERS

The Executive Council of the Pakistan Engineering Congress approved Membership of the following new members into the Congress fold. The Engineering News congratulates all of them and welcomes them to Pakistan Engineering Congress

Members admitted on 03-07-2008

- | | | | |
|---|------------------------------|----|------------------------------|
| 1 | Engr. Imran Ali | 7 | Engr Major Iftikhar Bin Niaz |
| 2 | Engr. Moeed Qadir | 8 | Engr. Muhammad Zubair Asifi |
| 3 | Engr. Muhammad Aslam Khokhar | 9 | Engr. Lt. Col. Anwar-ul-Haq |
| 4 | Engr. Bilal Ahmad | 10 | Engr. Maj. Khurshid Hussain |
| 5 | Engr. Imran Shahid | 11 | Engr. Anwar-ul-Haq Bloch |
| 6 | Engr. Muhammad Imtiaz-ul-Haq | | |

Members admitted on 26-08-2008

- | | | | |
|---|---------------------|---|---------------------|
| 1 | Engr. Aftab Ahmad | 5 | Engr. Sehar Shahzad |
| 2 | Engr. Asim Nasim | 6 | Engr. Imran Tahir |
| 3 | Engr. Khurram Aftab | 7 | Muddassar Mahmood |
| 4 | Engr. Saad Nazir | 8 | Engr. Awais Safder |

Members admitted on 26-09-2008

- | | | | |
|---|----------------------------|---|-----------------------------|
| 1 | Engr. Muhammad Khalid Shad | 5 | Engr. Usman Sajjad |
| 2 | Engr. Muhammad Aurangzeb | 6 | Engr. Muhammad Adil Masroor |
| 3 | Engr. Hesham Arshad Baig | 7 | Engr Islam Mustafa |
| 4 | Engr. Aamir Iqbal Khan | | |