

in the outskirts of towns. Street dogs eating raw meat have taken the place of vultures. Now street dogs have transformed into a ferocious breed, attacking human beings. Large-scale industrialization polluted ponds, lakes, rivers, seas and air. Several 'Minamata disasters' and other industrial disasters such as the Bhopal Gas tragedy came into light.

Was there a necessity of pushing states into war, such as the Vietnam War in the 1960s and the recent Gulf/Iraq wars? Oil wells and tankers were set ablaze that polluted the atmosphere, generating large amount of heat. Treacherous weapons that were hazardous to the environment were tested in the name of wars.

No doubt, a huge volcanic eruption like that of Krakatoa in 1883 is capable of contaminating the environment, which can be equivalent to pollution created by man for decades. Nonetheless, nature repairs the damage within a few years, making the environment fresh and healthy. Damage to the environment by man, however, never ceases or depletes, it only adds up. It does not give opportunity to nature to 'repair' the damage. Are we digging our own grave?

Developing countries are proud of their progress and their cities are bubbling with activities with 'Las Vegas-type' lighting lasting throughout the night. Roads are choked with vehicles and it takes several hours to reach one place to another a few kilometres apart. The developed nations showed sympathy to developing

countries. They generously donated to fight hunger and to save children. There is competition among celebrities to adopt poor children. As the aid poured in, the population of the down-trodden multiplied enormously. The charity of the affluent nations has turned the developing nations into 'confirmed beggars', expecting more and more aid. As the population exploded, their need for food increased enormously; there is greater utilization of natural resources and further damage to environment increasing global warming. Instead, the aid should be diverted to educate people regarding perils of population explosion. When the aid for wheat from the PL480 scheme was given to India in 1960s and 1970s, the donating country should have insisted on checking the population growth. Since then, our population has more than doubled and proportionately our needs. We are not able to reap the benefits of our progress over the last 5–6 decades.

Scientists and environmentalists are aware of the above facts. Several conferences/seminars/workshops have been conducted and papers have discussed the cause of global warming. Scientists and policy makers are aware that air conditioners release green-house gases. Yet they move in air-conditioned cars and seminars are conducted in air-conditioned halls. A large number of heat-generating bright lights decorate the venues. They want to ban plastic, but food and water is served in plastic containers. Carelessly thrown plastic bags choke the drainage resulting

in flooding. Yet we dispose plastic bags haphazardly.

We are aware of the facts as well as the remedy. Who would 'bell the cat'? Probably the German (and also Dutch) way of dealing facts could provide some clues. They are conscious of pollution caused by motor vehicles and to go on bicycles. There are separate tracks for bicycles, whereas in developing countries it is now considered far below one's dignity to ride a bicycle. In China and India, bicycles are slowly disappearing from the roads. Although highly affluent with a huge amount of per-capita income, the Germans shun away from wasteful expenditure. Air conditioners and heaters are used sparingly. The Germans avoid moving in individual cars as they have managed an efficient network of public transport. How many of us in the developing countries adopt such measures? It is said that the Western world is responsible for global warming and it is expected that the same affluent society would find a solution. Are we ready to sacrifice the luxuries that the modern world has offered? Is it possible to avoid using fossil fuels that took millions of years to form? Is it not possible for us to bring an end to ice-sheets and glaciers from melting? Are there any other remedies?

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## Imperatives for tsunami education

The memories of the tsunami of 26 December 2004 that killed lakhs of people in several countries around the Indian Ocean are slowly fading. While it is true that the sorrows and miseries of the past should be left behind, the coastal communities cannot afford to forget the incident, as it is by no means an odd one. Tsunamis are a recurring phenomenon. The nation should initiate efforts towards tsunami preparedness. Educating the coastal communities that are at risk should form an essential component of tsunami preparedness.

An earthquake followed by an unusually receding sea is a sure sign that a tsunami is on its way. In case of a tele-tsunami (far-

field tsunami), the earthquake may not be felt, but the unusually receding sea is a tell-tale sign of the approaching tsunami. This simple knowledge could have saved thousands of lives on 26 December 2004. It is by now a well-known story, how a 10-year old British girl, Tilly Smith with her presence of mind and quick thinking, saved about 100 lives on that day at one of the beach resorts in Phuket, Thailand. All she did was to alert the people on the beach about the possible tsunami, when she saw 'bubbling on the water, right on the edge, and foam sizzling just like in a frying pan'<sup>1</sup>. When everyone on the beach like everywhere else in many

countries around the Indian Ocean followed seaward (unfortunately to a point of no return), curiously watching the unusually receding tide, in a false-ebb (which normally precedes a tsunami), the girl warned people around her that it is a sign of an approaching tsunami, about which she had learnt in her geography class a few days ago. Later, the girl became the United Nations brand ambassador in its campaign to highlight the importance of tsunami education<sup>1</sup>.

Not only did the common man on the beach on that fateful day fail to realize the impending tsunami, but what happened in the scientific communities in

countries like India was more unfortunate. The tsunami hit the country's territory in the Andaman and Nicobar Islands, killing thousands of people at around 6.30 am and reached its eastern shores on the mainland well past 9.00 am. The British school girl in a Thailand beach could save people within less than ten minutes of reaction time available, that too with just plain thinking about the possibility of a tsunami and not based on what has happened somewhere already. Therefore, what happened in India is simply unexplainable. There were statements that India has no tsunami-warning system and hence no warning could be issued in time to save lives. But, as Raval<sup>2</sup> succinctly put it, there was a failure of mind rather than absence of machinery alone in India. To simply put it, lack of tsunami education was what led to the death of several thousands in India on that day.

Now, it is heartening to note that India is inching towards establishing a Tsunami-Warning System. In fact, an Interim Tsunami-Warning System was already put in place at INCOIS (Indian National Centre for Ocean Information Services) within seven months after the occurrence of 2004 tsunami<sup>3</sup>. This system is supported by a network of tide gauges and at present with one bottom pressure recorder. More instruments are planned to be added covering the entire region. Towards modelling tsunamis, high-resolution coastal topography and bathymetry mapping is being taken up, and the inundation models already prepared for Nagapattanam and Cuddalore regions closely matched the actual tsunami inundation in these coastal sectors<sup>3</sup>. However, providing all modern gadgets and doing research and

preparing computer models is just not enough. Ensuring peoples' participation is equally important in tsunami preparedness efforts. The government machinery at Central, State, District and city/municipality/village levels should gear up to create awareness on tsunami and other coastal hazards among the coastal communities. Public participation should be encouraged in decision-making on the evacuation procedures and escape routes, on the importance of tsunami-readiness, self-protection measures and also on the need for sustainable coastal land use and conservation measures. Massive coastal vegetation programmes must be taken up on scientific lines with location-specific species. Booklets and pamphlets should be printed in all languages, containing easy-to-understand graphics and cartoons explaining the procedures to be followed in the case of natural disasters. Pictorial depictions catch the imagination much better than written words. There should be proper coastal zone management programmes for sustainable development of the country's coastal regions.

In fact, tsunami education should begin from childhood. School curricula should be infused with information on tsunamis and the precautions that one should take in such eventualities. Universities and institutions should gear up their research teams and initiate special multidisciplinary laboratories and research centres to conduct quality research on tsunamis. (Many Japanese universities and institutions have specialized laboratories to conduct research related to active faults, subduction zones, earthquake engineering, physics of tsunamis, tsunami modelling, identification of past tsunami events,

and their possible sources and intensities from subsurface sediments.) Research laboratories may be funded for acquiring the state-of-the-art equipment to conduct research in these areas. Universities should also be encouraged to take up public awareness programmes. The government on its part should make topographic maps, aerial photographs and data on coastal zones available to researchers. Coastal zone mapping should be taken up frequently and on large scale. The tide gauge network should be improved. All the basic data on coastal zones should be updated periodically and made available through the internet.

The 26th of December may be designated as the 'Tsunami day'. Elaborate programmes should commemorate the day, including mock tsunami drills aimed at training the coastal communities at risk on how to react and follow the pre-determined escape procedures when a tsunami warning is issued. This will ensure that the tsunami danger is alive in the minds of the people.

1. U.S. Water News Online, Tsunami hero girl sees UN, meets Clinton, *U.S. Water News Online*, 2005; <http://www.uswater-news.com/archives/arcglobal/5tsunhero11.html> (accessed on 18 June 2007).
2. Raval, U., *Curr. Sci.*, 2005, **88**, 1020.
3. Kumar, S. T., *Coastal Oceanography: Remote Sensing and GIS Applications*, Andhra University Press, Visakhapatnam, 2007, pp. 163-166.

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## Is syndromic approach appropriate for managing STIs

Sexually transmitted diseases (STDs) remain a public health problem of major significance in most parts of the world<sup>1</sup>. Syndromic approach is the mainstay of the sexually transmitted infection/reproductive tract infection (STI/RTI) control programme in India. We made an attempt to identify pathogens from individuals with STI syndrome using standard microbiological techniques. The results

show that STD could be diagnosed in the laboratory only in case of 30% males and 40% females having some STI syndrome (Table 1). A study carried out in Tamil Nadu could diagnose disease only in 10.7% of women having discharge<sup>2</sup>, while in a study<sup>3</sup> conducted in Gujarat, the positivity was 47.5%. All these studies show that a substantial number of individuals having STI syndrome do not have

laboratory-proved disease. Thus, syndromic management of STIs often results in overtreatment, which happened in our case in more than 60% individuals.

The main disadvantage of syndromic management is the cost of overdiagnosis and overtreatment involved. In addition, it does not address the issue of subclinical and asymptomatic infections<sup>2,3</sup>. Further, in case of vaginal discharge, psycho-