Bottom Water Sets World Guessing

Scientists used to believe that part of the South Pole ice cap would soon collapse into the ocean and increase sea level so much that vast parts of the earth would flood. Gemini News Service reports that this scenario has now found disfavour, but that doesn't mean all is fine in the Antarctic.

Mike Crawley writes

THE good news in that contrary to theories making the rounds until recently, the western half of the Antarctic ice cap is not about to break off into the ocean, causing a catastrophic rise in sea level. At least, not for the next 100 years or so.

The bad news is that scientists are examining another little-known phenomenon that is bound to have some impact on the global climate.

It's a change in what's known as Antarctic Bottom Water. Currents of water develop under the southern polar ice shelves, the parts of the ice cap that float rather than sit atop land.

As these currents emerge, they melt some of the ice, then carry cool, oxygen-rich water into the deepest depths of our oceans. It keeps the temperature and oxygen level of the deep sea at a happy equilibrium, and its effect has been seen as far away as 50 degrees north latitude.

However, global warming is causing changes in the Antarctic, which means changes in the current that flows under the ice shelves. And that in turn means some change to Antarctic Bottom Water influence on the deep sea.

What that means is anybody's guess, says David Vaughan, a glaciologist with the British Antarctic Survey's ice and climate division. The British Antarctic Survey is one of the most — if not the most — prestigious scientific labs studying climate change in Antarctica.

"We don't understand it well," admits Vaughan. "We can't say what the real outcome would be, all we can say is change."

Vaughan says Antarctic Bottom Water is "part of the natural order". Scientists know that changes in ocean currents have impacts on the world environment: witness the effects of El Nino, a warm Pacific current that is being blamed for the growing frequency of extreme weather events.

Although the Antarctic may seem too far away from civilisation to have any impact on humans, its effects on the global climate — in particular the oceans and southern fisheries — are profoundly powerful. As Vaughan says, Antarctica sits right in the middle of the global climate engine.

Statistics from NASA show that 1998 was the warmest year on record, and it wasn't a freak occurrence as global temperatures have been rising steadily since the beginning of the century.

The blame falls on an increased amount of carbon dioxide in the atmosphere, which is caused by the burning of fossil fuels. Scientists say that existing attempts to reduce consumption — such as the Kyoto Protocol that commits developed countries to a five per cent drop in their use of fossil fuels — don't go far enough to stop the warming trend.

The theory has been that global warming would cause melting in the Antarctic ice cap, which in turn would cause sea level to rise.

One theory that was widely accepted in the scientific community predicted that the entire Western Antarctic ice shelf would be so weakened by global warming that it would plunge into the sea in the next 100 years or so, causing a five-metre rise in sea level.

To put that in context, sea level has risen 10 to 20 centimetres in the past century. "A five-metre rise in sea level is Armageddon," says Vaughan.

"The scientific debate since then has been quite vigorous," he adds. "The impact of climate change in Antarctica is going to be a lot more complicated than simply the ice cap melting and raising sea levels."

Glaciers and ice shelves all over the world have retreated during the past 100 years. Yet two of the Antarctic's largest ice shelves, the Ross and the Ronne-Filchner, each about the size of Spain, have yet to retreat. "They're each a long way away from the temperature that would cause them to melt," adds Vaughan.

In fact, the Antarctic may actually help mitigate the predicted rise in sea level, as snow that falls over the continent cab be absorbed into the ice cap.

There is little historical data to measure long-term temperature trends in the Antarctic. On the Antarctic Peninsula — the thousand-mile-long arm that just out toward South America from the mostly circular Antarctic — temperature has been monitored since the 1940s at Britain's Faraday Research Station, now operated by Ukraine and called Vernadsky.

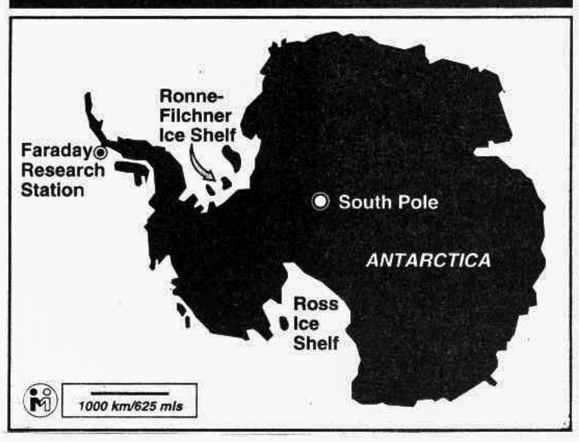
It has measured "a rise in the order of two and a half degrees centigrade in the past 50 years," says Vaughan. That's five times the global temperature increase of half a degree during the same time period.

Yet, adds Vaughan: "The rest of the records from the Antarctic don't show anything like a warming trend."

He says that discrepancy is a good example of how climate change works: it's a complicated phenomenon that manifests itself in multiple ways and only time will reveal what its ultimate effect will be.

The writer is a Canadian Journalist working for Gemini News Service on a fellowship from the International Development Research Centre.

Bottom of the world



Sinking Wells for Drinking Water

by Reaz Ahmad

Babies born with a right to cry. First they cry for mother's milk. Then as they grow up, they keep crying for one or the other necessities of life. But, let not anyone ever cry for the life itself — water.

QUIET flows the river Matamuhuri — lean and thin. No wonder a stranger fondly calls her gentle. Indeed she is during this post-monsoon period. Few months back when Matamuhuri was full of youth and fury with hilly onrush washing whatsoever came her way on either bank, she made things difficult for this difficult terrain of Bandarban.

A tender aged boy was trekking his way pulling a tough rope tied tightly with anchors on ground at both banks of the river. Every act of pulling rope was automatically pushing our boat towards the other bank of the river.

As the young boatman exhibited his state-of-art rowing without a single stroke of oar, I asked him how often Matamuhuri changes her course. With midday sun glittering on his happy face and also on the swollen muscles of two industrious hands, the boatman (or, should I say boatboy) said, "many many times".

But it was not before another half an hour walk down the serene hilly village, I came to know that tribesmen and women did also change their 'course of water' (or, should I say source of water).

In Nayapara, a village under Ali Kadam thana on the bank of river Matamuhuri, some 63 Marma families live in peace. Until recently they used to fetch drinking water from the river and they did fetch germs of water-borne diseases as well, knowingly or unknowingly.

Fortunate were they who could take the trouble of walking a long distance to fetch water from a far off tube-well sunk by the Department of Public Health Engineering. But poor maintenance used to keep that tube-well out of service every now and then.

NGO Forum Drinking Water Supply and Sanitation came in a big way to provide people in the hill district, irrespective of their tribal and non-tribal identities, with Ring Wells. Village Nayapara is lucky enough to have one Ring Well sunk on its ground recently.

Shu En Prue, a happy-smile tribal woman in her late 20s, was giving a demonstration how a Ring Well works and said, "collectively we mobilised Taka 7,200 to match NGO fund for sinking a Ring Well in our village. No longer we fetch water from river. Now, Bengalee people in the neighbourhood also share this water with us."

Taka 7,200 is a 10 per cent collateral that has to be collected by people in the community themselves. The logic is that, as one official was telling me, the pride of contribution gives the beneficiaries a sense of ownership and care.

Ring Well is nothing unique in real sense rather, a combination of tube-well and traditional well devised in a way to suit the water-scarcity-prone hill districts. In Nayapara, tube-well is set on a ring-cover of 29 feet diametre and hole is dug some 43 feet down under. A mechanic was telling me that every night five feet water is deposited and people can have access to water pumping the handle of the tube. Depth and width of Ring Well vary from hill to hill, plain to plain, depending on layer of water under the earth.

When the picture of drinking water seems bright in Nayapara, the picture is as gloom as it could be when we talked on the issue of hygienic sanitation. Some tribal people still ponder why one should defecate down the sanitary latrine when human excreta has got high food value for domestic pet like pigs! Fortunately our Prue is not one of them. She understands well the health benefit of using sanitary latrine but, said "we need financial support to set such latrines in our village". Presently, like co-villagers, Prue's family also use natural settings in bush for responding to the calls of nature.

Rashedul Anwar, Unit Manager of the Ali Kadam chapter of ISDE, a partner NGO of the NGO Forum, told me that latrine coverage was very poor in the thana. "We are giving motivation through our Group members", said Anwar.

ISDE Integrated Social Development Efforts has got 32 Groups having 493 members — all women, each representing a family. Of these 32 Groups, five are of tribal women and the rest of non-tribal. Only 150 households got sanitary latrines, said Anwar.

If not for sanitation, ISDE can at least justifiably claim credit for providing villagers with safe drinking water by sinking 10 Ring Wells in Ali Kadam. Of these 10, two are exclusively for tribal community and five for Bengalees, while water from three others are shared by tribes and non-tribes. They are sinking wells to have people access to pure drinking water.

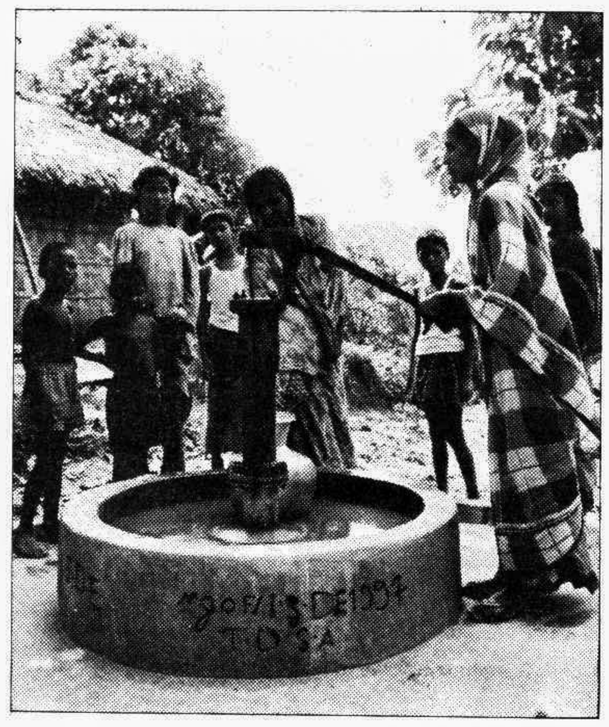
However, there is no room for complacence. As I walked down the muddy narrow path across the nearby village Danu Sardarpara, predominantly a Bengalee neighbourhood, it was quite visible that number of Ring Wells remained to few to quench the thirst.

Fatema, a housewife, lives so close to a Ring Well and still feels left out. She is not a member of ISDE Group and now her neighbour Jahanara, a Group member, did not allow her to fetch water from the Ring Well. Khatija Begum, another non-member, told me that as they could not contribute with money in sinking the Ring Well, they are deprived of water.

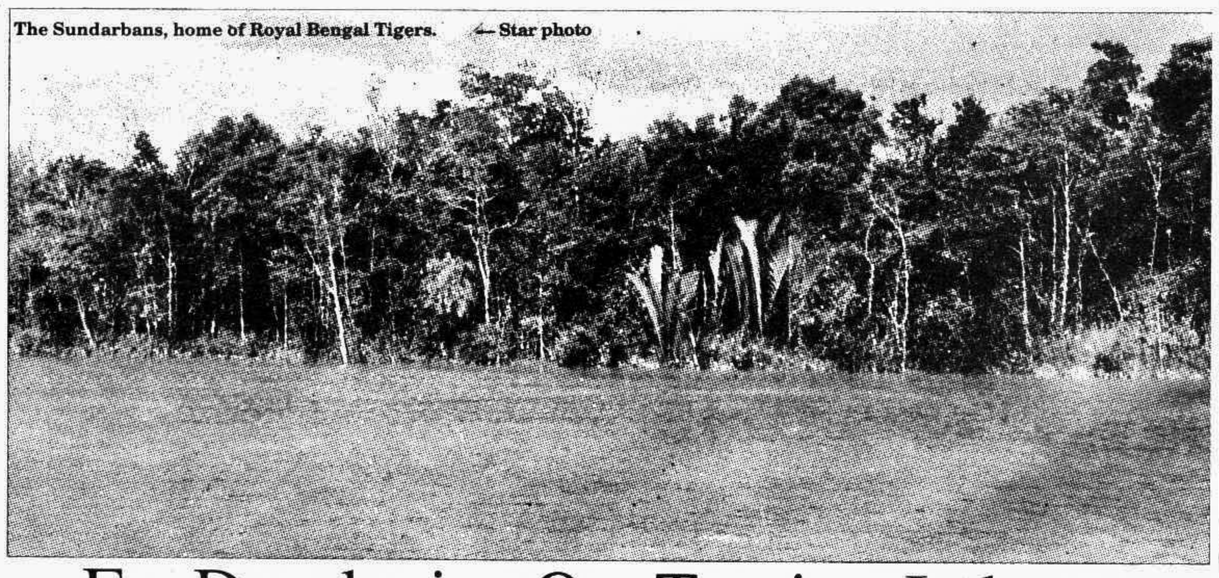
ISDE field workers tried to make all understand that no matter who did contribute and who did not, water goes for all. And it seems this understanding gave them enough sense.

Danu Sardarpara women are quiet reasonable and they do care each other's problem. They could only hope the village goes better off water-wise and the only other tube-well sunk by Department of Public Health Engineering no longer remains inoperative.

Babies born with a right to cry. First they cry for mother's milk. Then as they grow up, they keep crying for one or the other necessities of life. But, let not anyone ever cry for the life itself — water.



Ring-wells in hill districts come as a solution to acute crisis of pure drinking water.



The Sundarbans, home of Royal Bengal Tigers. — Star photo

For Developing Our Tourism Industry

by Pial Das

If normalcy is maintained and if publicity is made properly, the country can earn from the tourism sector more foreign exchange than from the existing traditional sectors.

TODAY tourism is considered as the single largest industry throughout the world. By augmenting national income and other activities it brings significant improvement to the balance of payment and general economy of a country. This is now an undeniable fact that tourism can play a vital role in the economy of developing countries. Besides improvement in the balance of trade, it generates many other socio-economic benefits including gearing up of profitable activities and employment opportunities.

Comparatively tourism, as a trade and industry, is a new sector. Actually, 'tourist and tourism' was not so familiar before the 18th century. In 1841, Thomas Cook brought into practice a tour in England and that is why, 'Thomas Cook and Sons' is considered as the first firm of the tourism industry. In the past, tourism was a monopoly of the developed countries but today many developing countries of the world have been improving their economy through tourism. In Indonesia and Mexico, for example, more than 70 per cent of the total revenue from exports and services is accounted today for tourism. A similar transformation has taken place in many other developing countries like Morocco, Kenya, Nepal, Thailand, Singapore etc.

For greater promotion of tourism, the World Tourism Organisation (WTO) was established in 1975. It should be noted that Bangladesh is a founding member of this organisation. Bangladesh Parjatan Corporation (BPC) as the national tourism organisation was established in January 1973. And in Bangladesh tourism as an organised industry began to take roots with the formation of this organisation. The government of Bangladesh recognised the tourism sector as an industry in 1991. Each and every government has taken several measures for the overall development of the industry. In order to exploit the country's tourism potentials a big amount is invested but the return is not at all satisfactory. Tourism as an industry has been developed everywhere except Bangladesh. It is true that in Bangladesh tourism is still in 'infancy stage'. Though a little improvement has taken place, in comparison to others it is, in fact, negligible. But why ? What is the problem?

We politely accept the fact that we have no Ground Canyon, the Pyramids, Niagara waterfall, Tajmohol or Mount Everest. Each and every country has its own beauty, art and culture. Here I would like to quote the comment of Dr. Rasidul Hasan, ex-chairman of the Marketing Department, Dhaka University, who was awarded a doctorate degree in tourism. According to him 'a tourist from a developed country will not agree to visit Cox's Bazar. They would rather like to visit the unique uniform style of architecture of Paharpur, Mahastangar, tribal festivals and the largest mangrove forest, the Sundarbans. The visitors will want to visit those places as they are not available in their country. The charm of Bangladesh lies much in its picturesque panorama of natural beauty. Rich forests , mighty rivers, tranquil lakes and miles and miles of quiet countryside can captivate the imagination of all and sundry.

I think, mainly there are two problems. Firstly, we have miserably failed to create a correct and original image about the special attractions in our country and secondly because of intermittent political turmoil in Bangladesh tourists are often disinterested to visit this country. It is not possible for the BPC only to increase the number of tourists. Active participation of the mass people and adequate assistance of related govt. and non-govt organisations can only ensure the success of BPC. A section of people pass a remark that only sufficient publicity can attract the foreign tourists. But it should be noted that without ensuring a safe and sound atmosphere a voracious campaign is nothing but an abortive effort. Thus with unanimous support we may comment that adequate publicity and a peaceful atmosphere are almost equally important for the development of tourism.

First, let us talk about campaign. Publicity or campaign may be of two types. Firstly, through the Bangladesh embassies aboard and secondly, through the BPC and NGOs. Bangladesh, according to the foreign media, is not a country of diverse attractions but a country of flood, famine, political unrest, natural calamity etc. And we have also failed to send the news to each and every corner of the world that we are not conservative, we have a bountiful nature and friendly millions with more than a millennium old cultural heritage. Our embassies, BPC and the private sector may play a vital role to describe our country as "a land of emerald and silver", "a garden fit for kings" before the foreign tourists.

Even rapacious publicity must be failed if lawlessness exists in the country. The importance of the law and order to increase the number of tourists need no further description. Another important sector that is pressed for special care is described below:

A congenial cultural environment is essential for the development of tourism. And it should be noted that the impact of cultural tourism in national economy is of great importance. With the development of tourism, the culture of our country would come into focus beyond the national boundaries and rich culture will take its rightful place in the world with the result that it would create an awareness at home for its further development with a broader outlook. The country's archaeological remains bearing testimonies to its glorious past, the mosques and temples, settlements and shrines music and festivals will afford pleasure and knowledge to people far and wide.

It is widely said that if we can present our Sundarbans as a home of the Royal Bengal tiger to the foreigners, the current figures of visiting tourists will be doubled. If we are able to present the world's longest (120 k.m.) beach, Cox's Bazar, in a better perspective to the foreigners, the tourism industry must provide us a resuscitated national economy. And it is possible to show from actual data that if normalcy is maintained and if publicity is made properly, the country can earn from the tourism sector more foreign exchange than from the existing traditional sectors.

The Dark Side of Flouride

by Dr A K Susheela

DURING 1940s, when flouride was used for preventing a dental disease called dental caries, the possibilities of harmful side effects were never considered nor was there scientific data. Sixty years later, it is well established, that fluoride, when used in the name of prevention of caries through tooth paste, mouth rinses, tablets etc is causing serious health problems.

The practice of promoting flouride in India, thus, needs to be stopped.

India is among the 23 nations around the globe where drinking water is contaminated with flouride. Flouride ingestion causes fluorosis and a variety of other health problems.

It is for these reasons, the Central Ground Water Authority (CGWA) has issued a public notice which appeared in most of the leading dailies recently, warning people not to consume ground water from shallow water bearing zones up to 30 metres in six blocks of the National Capital Territory of Delhi. The blocks are Kanjhawala, Najafgarh, Alipur, City, Shahdara and Mehrauli.

To date, about 16 states have been affected by this disease. The main cause being flouride contaminated drinking water consumed by large sections of population. An estimated 62 million people are sick due to fluorosis of which 6 million are children below the age of 14 years.

The affected states are: Andhra Pradesh, Gujarat, Rajasthan, Madhya Pradesh, Maharashtra, Tamil Nadu, Karnataka, Haryana, Punjab, Bihar, Uttar Pradesh, Delhi, Orissa, Kerala, Jammu and Kashmir and West Bengal.

The earth's crust in these states has flouride bearing minerals and that is the source of flouride leaching into the water.

Flouride ingestion can cause a disease know as fluorosis. There are 3 types of fluorosis depending upon the areas of the body (tissue) affected.

Dental fluorosis: This form of fluorosis affects the teeth and occurs in children. The natural shine or lustre of the teeth disappears in dental fluorosis. In early stage of dental fluorosis, the teeth appear chalk white. The chalky white colour gradually becomes yellow, brown or black.

The discolouration will be horizontally aligned on the tooth surface as "lines" or "soots". The discolouration if due to dental fluorosis will be away from the gums.

When the discoloured area is examined with a magnifying lens, tiny pits or perforations can be seen. This is also cavity formation and the cavity will be on the surface of the teeth.

The disease has mostly cosmetic implications and has no treatment. If the discoloured teeth need to be masked by spraying a plastic emulsion, laminated veneering can be done.

Skeletal fluorosis: Skeletal fluorosis affects the bones/skeleton of the body. There is no age barrier. Skeletal fluorosis can affect young and old alike. In this disease, one can have aches and pain in the joints.

The joints normally getting affected are of the neck, back, hip, shoulder or knee which makes it difficult to walk and movements are painful. Rigidity or stiffness of the joints also set-in.

Non-skeletal fluorosis: In this form of fluorosis, the soft tissues of the body are affected. The symptoms include gastro intenstinal complaints — nausea, loss of appetite, pain in the stomach, bloated stomach (gas formation), constipation followed by intermittent diarrhoea.

Persistent or chronic headache, muscle weakness, extreme tiredness, anaemia (low hemoglobin), tendency to urinate more frequently although the volume of urine may or may not be large (polyurea).

Excessive thirst (polydypsia), repeated abortions or still birth, male infertility due to sperm abnormality are also some of the complaints.

Complaints listed under skeletal and non-skeletal fluorosis may also occur due to reasons other than excess flouride in drinking water. To confirm the health complaints are due to fluoride, one ought to get the drinking water (collected in a plastic bottle-50ml), blood and urine of the individual tested for flouride.

Testing for flouride should preferably be done using on selective electrode technology for obtaining reliable and accurate results.

As flouride causes a number of health problems, the common public may or may not know why flouride is still being promoted in India though toothpaste and mouth rinses. There is a lot of publicity promoting fluoride, these are the common commercial tactics for sale of the product.

It is also true that some dental professionals also promote fluoridated products for preventing dental caries in different parts of the globe including India. They belong to the old school of thought when flouride was considered good for teeth. Such views are outdated, unscientific and no longer valid.

What is dental caries & how to prevent it: To set the records straight, it is necessary to state that the practice of using fluoridated toothpaste, mouth rinses, and tablets in the name of prevention of caries (cavity formation) is a 60-year-old concept.

The reason is flouride being an electronegative element, would bind with the positively charged calcium lons (CA++) of the teeth and it make the teeth stronger. This was more of a hypothesis.

It is evident from research carried out in India during 1980s and 1990s that the use of fluoride leads to loss of calcium from teeth and it makes them weaker besides aggravating cavity formation.

The second concept was based on the fact that flouride being a powerful enzyme poison (inhibitor), destroys the enzymes in the bacteria breeding in unhygienic mouth and prevents them (bacteria) from producing acids which etch away the enamel and form cavities.

Although this concept is very valid, it was never anticipated by dentists that the same flouride would also inhibit enzymes of other tissues and organs in the body besides that of the bacteria and that it would cause health problems of a wide variety.

The public may still find that in India many dental professionals, promote the use of fluoride for preventing dental caries. They belong to old, outdated school of thought. The government, after seven long years of debate, during 1991-92 amended, the Drugs and Cosmetic Act of 1945 introducing stringent criteria for manufacture of toothpaste.

The draft gazette notification, was tampered with and the most important clause that "Children below seven years should not use fluoridated toothpaste" was missing in the final gazette notification.

The issue was then discussed in the Parliament. A committee was appointed by the then minister of health, to reintroduce the above clause. The decision and recommendation of the committee, perhaps is still collecting dust on the shelves of the ministry of health or buried forever.

At best the people in this country can do is not to buy or use any fluoridated products, as fluoride to injurious to health.

In order to prevent dental caries, the best approach is to promote oral health and hygiene practices and introduce adequate calcium and vitamin C to the daily diet.

To have strong and healthy teeth in a child, the mother from the time, she has conceived the baby, needs to take adequate calcium and vitamin C. A regular intake of these essential elements and good oral hygiene practice can provide the child with good teeth.

What is dental fluorosis: Dental fluorosis is a disease caused by use of flouride during the period when tooth development takes place, discolouring the teeth.

The discoloured area of the teeth gets pitted and perforated. The pitting and perforations of the teeth, in dental fluorosis occur on the surface of the teeth. Use of flouride, aggravates cavity formation. The cavities formed in dental caries are visible to the naked eye.

The cavities in dental caries are formed on the lateral sides of teeth or in between two teeth or in hidden crevices of the teeth where the food accumulates and bacteria breed.

Fluoridated toothpaste, although has no beneficial role to play, rather makes one loose teeth at a much younger age.

One can become edentulous even at the age of 45 or 50, if excess fluoride is used and if one is sensitive to flouride. Perhaps, the most appropriate caution that needs to be introduced on toothpaste carton in a country like India would be "beware of fluoride."

The health problems arising due to consuming flouride contaminated water, is brought out through this article so that it would be helpful to recognise health hazards due to fluoride.

Fluoridated dental products, when used, enter the blood stream immediately, as the mouth (oral cavity) is very rich in fine blood vessels and fluoride being a water soluble chemical, is easily absorbed.

— PTI/APB Feature

The writer is director, Fluorosis Research and Rural Development Foundation, Delhi.