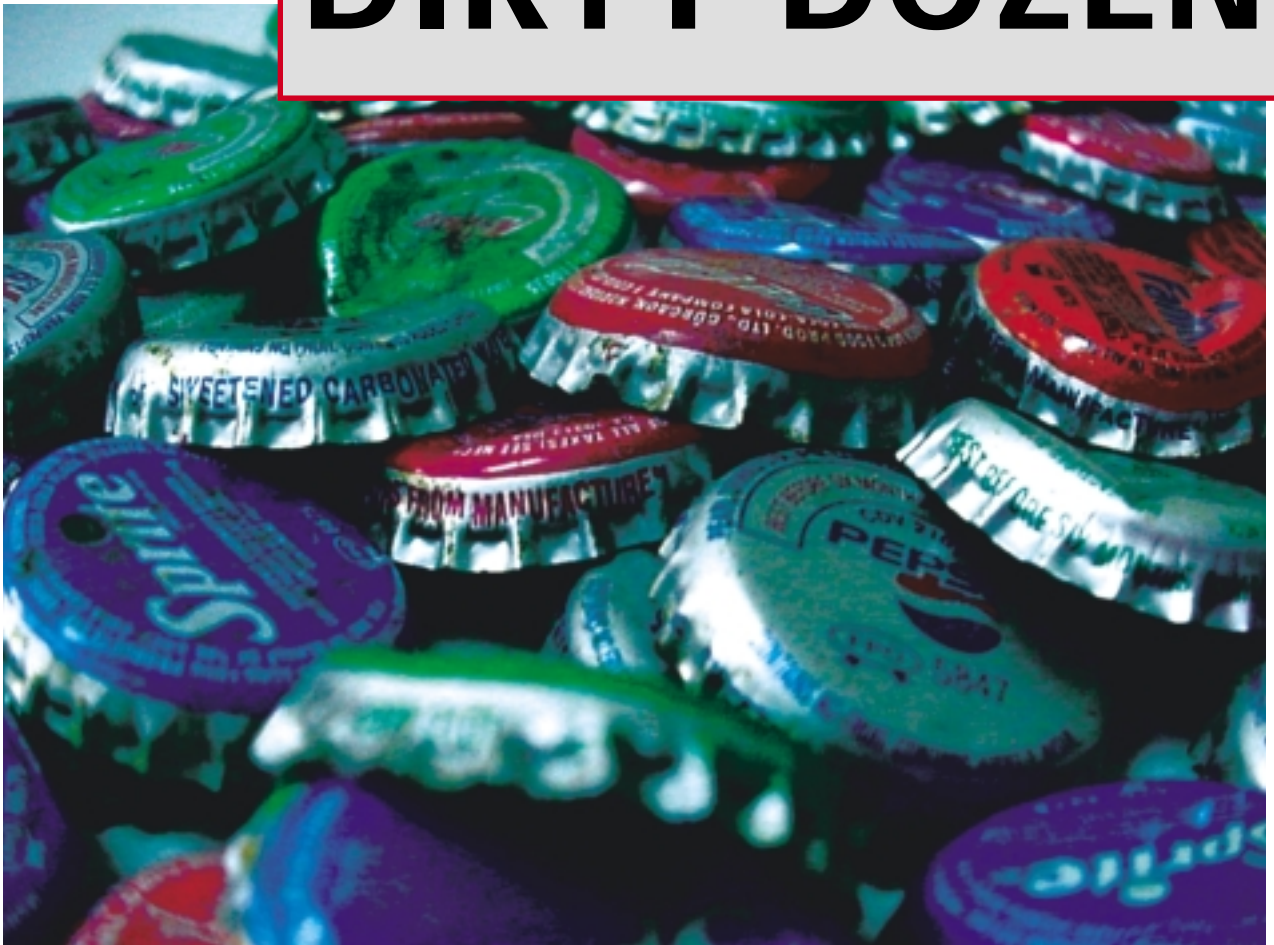


12 brands of cold drinks put to the test the coolest event of our times. They put to the test the most aggressive, glitzy, gutsy, premium, imaginative, high-quality, expensive and successful attempt to globally grab people's stomach share. As it turns out, Pepsi, Mountain Dew, Diet Pepsi, Mirinda orange, Mirinda lemon, Blue Pepsi, 7-Up, Coca-Cola, Fanta, Limca, Sprite, and Thums Up are . . .

# COLANISATION'S DIRTY DOZEN



CSE

The Pollution Monitoring Laboratory (PML) of the Centre for Science and Environment (CSE) places in the public domain its analysis of the contents of 12 cold drink brands sold in Delhi. Three bottles of each of the 12 brands were purchased from markets across the city and analysed to see if they contained pesticides.

PML tested the cold drink samples for 16 organochlorine pesticides, 12 organophosphorus pesticides and 4 synthetic pyrethroids — all of these are commonly used in India as insecticides, in agricultural fields as well as at home



**The test found: organochlorine pesticides**

**LINDANE ( $\gamma$ -HCH):** This deadly insecticide damages the body's central nervous system as well as immune system and is a confirmed carcinogen. It was found in 100 per cent of cold drink samples. Its concentration ranged from 0.0008 milligram per litre (mg/l) to 0.0042 mg/l in the samples tested. This last amount is 42 times the 0.0001 mg/l EEC limit — a set of standards stipulated by the European Economic Commission to control contamination in water used as 'food' — for maximum admissible concentration for an individual pesticide. It was found in Mirinda lemon. On an average, lindane concentration in all brands was 0.0021 mg/l, or 21 times higher than the EEC norm.

In the popular Coca-Cola brand lindane concentration was 0.0035 mg/l — a level of concentration which was 35 times higher than the EEC norms.

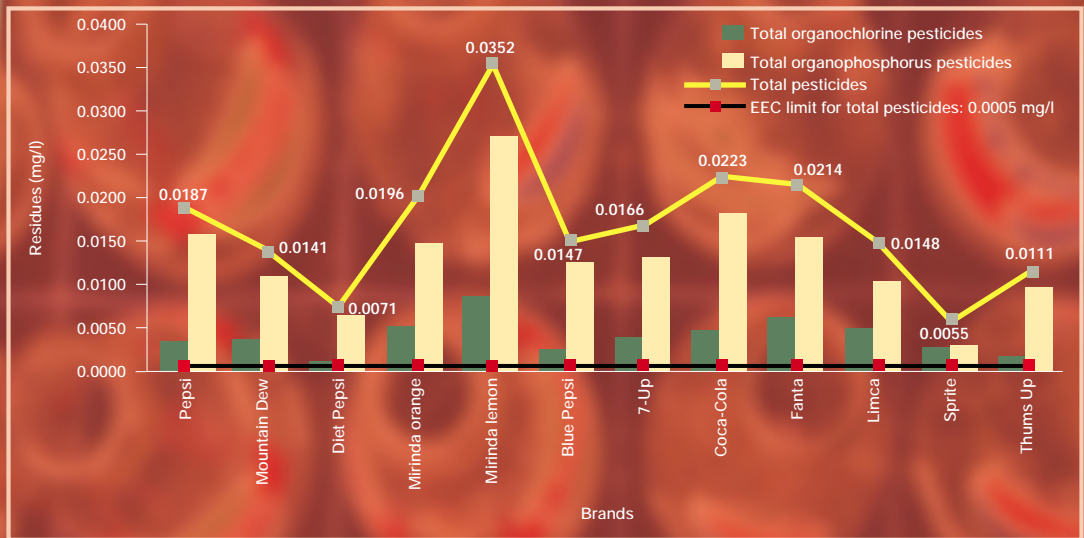
**DDT AND ITS METABOLITES (DDD & DDE):** Also detected in 81 per cent of the samples. Absent in Diet Pepsi, their concentration is as high as 0.0042 mg/l in Mirinda lemon (42 times higher than EEC norms). On average, total DDT and metabolites found in the samples stood at 0.0015 mg/l, 15 times higher than EEC limits. In the popular Pepsi brand it was 16 times higher than EEC norms. In the equally popular Coca-Cola brand, it was 9 times higher than the EEC limit.

**It found: organophosphorus pesticides**

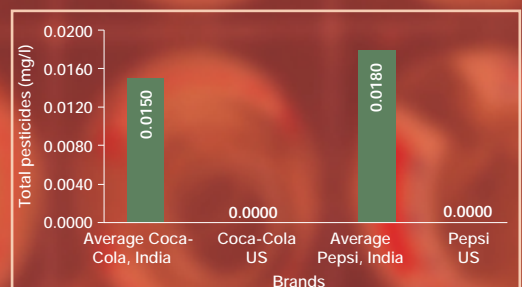
**CHLORPYRIFOS:** Especially dangerous for mothers-to-be and babies as it is a suspected neuroteratogen (it causes malformations in foetuses), this pesticide was found in 100 per cent of the samples. Maximum concentration was in Mirinda lemon flavour: 0.0072 mg/l, or 72 times more than the EEC single-pesticide norm. The average amount of chlorpyrifos found in all samples was 0.0042 mg/l, 42 times higher than the EEC norm.

**MALATHION:** Detected in 97 per cent of the samples, its concentration was highest in a Mirinda lemon sample: 0.0196 mg/l, or 196 times the EEC limit for a single pesticide. Coca-Cola had malathion 137 times higher than EEC norms. Malathion gets activated in the human liver to produce malaoxon, deadly for the nervous system. It is also a confirmed mutagen — it can tinker with the body's chromosomal set-up.

In sum, all samples of the 12 brands of cold drinks tested had pesticide residues. ▾



In contrast, PML needed to check if pesticide content was the global norm for the cold drink industry. It decided to procure a sample each of Coca-Cola (The Coca-Cola Company's flagship brand) and Pepsi (PepsiCo's flagship brand) from the US. The bottles were also analysed for the same pesticides, using the same methodology and equipment. PML found nothing. ▶▶



### In brand terms

Two multinationals — Atlanta-headquartered The Coca-Cola Company and New York-based PepsiCo — control the cold drink market in India. Their market share is a fiercely contested secret. They also seem to share a penchant for pesticide residues in their products. Total pesticides in all PepsiCo brands on average was 0.0180 mg/l, 36 times higher than the EEC limit for total pesticides (0.0005 mg/l). Total pesticides in all Coca-Cola brands were 0.0150 mg/l, 30 times more than the same EEC limit.

In conclusion, the pesticides found in soft drinks are odiously similar to bottled water, which the PML had investigated earlier in the year.

### Merchanting madira

By the 1990s, the carbonated drinks market in the US and Western Europe was saturated. Companies therefore turned to new ones. So came the fizz to the Middle East, refurbished East Europe and Asia. In 1991, PepsiCo entered the newly liberalised Indian market. 2 years later, Coca-Cola re-appeared (it was thrown out in the wake of the 1977 FERA regulations). Slowly beginning to dominate the Indian market — Coca-Cola bought out Parle Beverages and its brands Thums Up, Limca and Gold Spot; in 1999 it acquired Cadbury Schweppes' brands Crush, Canada Dry and Sport Cola. Pepsi, on its part, took over Mumbai-based Duke range of soft drinks — they now rule over it. By March 2001, government estimates that 6540 million cold drink bottles were sold annually in the country. In other words, with over a billion Indians, each Indian would be drinking roughly 6 bottles of soft drinks each year (compare: Pakistan, 17 bottles per capita per year; Sri Lanka, 21 bottles; China, 21). In Delhi, the consumption is a whopping 50 bottles per person per year. Companies are now busy wooing rural markets — the innovative 200 ml bottle, costing Rs 5-7, has been hailed as a success. In short, colonisation is here to happen.

But how can quality-conscious multinationals market products unfit for human consumption?

### The regulator's meaningless maze

Will they get away with it?

They wouldn't have got away in the US. Legally enforceable norms exist there, that regulate the kind of water used to make cold drinks with. (Remember, the main ingredient in a cold drink — or carbonated non-alcoholic beverage, as it is technically called — is water.) In the US, regulations provide that the quality of water used to make cold drinks must be the same as that used to make bottled water. 'Raw water' used to make bottled water falls under the regulative umbrella of the US Food and Drug Administration. In their rule-book, water consumed in this form is a 'food'; therefore

water used as an ingredient in beverages — also therefore a food — must meet the same standards as bottled water. In addition the Safe Drinking Water Act, a federal legislation under the Environment Protection Agency (EPA), stipulates drinking water standards to protect public health. Its primary standards are legally enforceable nationwide. The state of Massachusetts, for instance, stipulates that the source water used for bottled water (and carbonated drinks) must meet the federal EPA national primary drinking water standards.

They wouldn't have got away in Europe. The European Economic Council Directive 80/778/EEC lays down standards for the quality of drinking water intended for human consumption. Such water, it clearly specifies, shall include water used in a food production undertaking for the manufacture or processing of products and substances intended for human consumption, or effecting "the wholesomeness of the foodstuff in its finished form". (From December 25, 2003, this directive will be repealed and replaced by Directive 98/83/EC, in which the maximum admissible concentration for individual and total pesticide is the same.)

But in India, these companies cannot be taken to court. In fact, forget legal procedure; these companies cannot even be politely told to stick to norms. For — and this is precisely where quality-conscious multinationals laugh all the way to the bank — the norms that regulate the manufacture of cold drinks in India are a meaningless maze.

There is Rule 65 of the Prevention of Food Adulteration Act, 1954 (PFA). Rule 65 regulates the presence of insecticides and pesticides in food. But "food" is so defined in Rule 65 as to exclude "beverages". Does this mean the Act has nothing to say about cold drinks? Not at all. Sub-section A.01.01 in Appendix B defines the standards of quality for non-alcoholic beverages, but has nothing to say about pesticide residues. This Act is mandatory, but does not regulate pesticides in soft drinks.

Then, there are the specifications for "sweetened aerated water with no fruit juice or fruit pulp or containing less than 10 per cent of fruit juice or fruit pulp" in Part II (D) of The Fruit Products Order (FPO), 1955. FPO rules are as mandatory as the PFA's. It regulates the general characteristics of a beverage. On the quality of the basic raw material it merely says: "water used in the manufacture shall be potable and if required by the licensing officer shall be got examined chemically and bacteriologically by any recognised laboratory". Please note: "water...shall be potable". But what is "potable"? The Order does not define it; legally, therefore, the order provides no scope to regulate pesticide residues.

These two mandatory sets of rules apart, there exists IS 2346: 1992, a norm of the Bureau of Indian Standards (BIS). It lays down specifications for "carbonated beverages". In the



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The norms that regulate manufacture of cold drinks in India are a meaningless maze

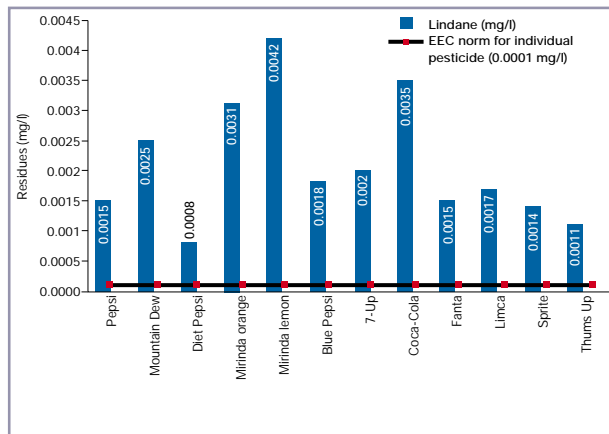




ANSHUMAN DE / CSE

## Lindane: enjoy!

Yeh dil maange more?



“foreword” to this document, water is clearly mentioned as an ingredient in carbonated beverages: “The quality of a carbonated beverage depends on the quality of the *various ingredients* that go into its manufacture — *water*, acidulants, sweetening agents, emulsifiers and stabilisers, flavour, colour and carbon dioxide being the important ones” [emphasis added]. The document then prescribes the requirements and methods by which the quality of carbonated beverages may be gauged. As part of this process, it lists the various ingredients that can be used to make carbonated beverages. In this list, there is no mention of water! In any case, this BIS standard is voluntary in nature (unlike the certification for bottled water); a company needn’t meet its specifications.

BIS has another standard, also voluntary — is 4251:1967 (reaffirmed 1977) — which prescribes standards for “quality tolerances for water for processed food industry”. It’s a bizarre piece of standard-setting. In its foreword, it says: “In processed food industry, water is used for a number of purposes, such as processing, washing, flushing and general usage and also for boiler feed and cooling”. Isn’t it also used to make cold drinks?

The bottom line is that in India, the cold drinks industry is virtually unregulated. Strangely, it is also exempted from the provisions of industrial licensing under the Industries (Development and Regulation) Act, 1951. It gets a one-time

license to operate from the ministry of food processing industries, which includes a non-objection certificate from the local government and a water analysis report from a public health laboratory. It also requires a no-objection certificate from the state pollution control board. That’s it. There’s no environmental impact assessment, or siting regulations for the industry. Its use of water — largely unpriced groundwater — is not regulated.

Forget pesticides. Standards for other substances — such as heavy metals like arsenic or lead — also are many times above the guidelines for drinking water issued by the ministry of urban development (see table: *Standards to regulate...*). For instance, for deadly arsenic, standards differ in different regulations — in soft drinks under the mandatory Food Products Order it is 0.5 ppm; under the BIS ‘voluntary’ standards, the quantity drops to 0.25 ppm; and strangely, drinking water guidelines specify a safe level of only 0.01 ppm. Therefore, soft drinks have been allowed 50 times higher arsenic content than in drinking water. Allowed lead levels for soft drinks are 50 times higher than bottled water. Cadmium is not even legislated. Why? Don’t ask. Working within the meaningless maze of such regulations, common sense dictates that a company would love to set up shop in India.

For full report, log on to [www.downtoearth.org.in](http://www.downtoearth.org.in)

## Standards to regulate other harmful substances in soft drinks are equally haywire (in ppm)

	Food Products Order, 1955	Prevention of Food Adulteration Rules, 1955	Carbonated beverages IS: 2346:1992	Bottled water IS:14543:1998	Drinking water guidelines <sup>1</sup>
<b>PESTICIDES</b>					
Pesticide residues	No standards	No standards	No standards	0.0001 (individual) 0.0005 (total)	Absent
<b>HEAVY METALS</b>					
Arsenic in soft drinks	0.5	0.5	0.25	0.05	0.01 (max: 0.05)
Cadmium	No standard	No standard	No standard	0.01	0.01
Lead (soft drink not including the concentrates used to make the drink)	0.5	0.5	0.5	0.01	0.05
Lead (concentrates used to make soft drink)	2.0	2.0	—	—	—
<b>OTHERS</b>					
Copper (soft drink not including the concentrates used to make the soft drinks)	5.0	7.0	1.5	0.05	0.5 (max: 1.5)
Copper (concentrates used to make soft drinks)	20.0	20.0	—	—	—

Source: 1. Ministry of urban development 1999, Manual on Water Supply and Treatment, 3rd edition — revised and updated, Central Public Health and Environmental Engineering Organisation

# Bottled water norms notified

## More new norms wanted



The Indian government has notified new standards for pesticide residues in bottled water. The notification came on July 18, 2003, bringing the curtains down on a 6-month drama that had turned quite farcical.

6 months ago, a study conducted by the New Delhi-based Centre for Science and Environment (CSE) (see: *Down To Earth*, Vol 11 No 18, February 15, 2003) showed that most brands of bottled water being sold under the ISI quality certification mark were pesticide-laden. Indian regulatory law for pesticide residues — the Prevention of Food Adulteration Act, 1954 (PFA) and standards specified by the Bureau of Indian Standards (BIS) — was exposed as archaic.

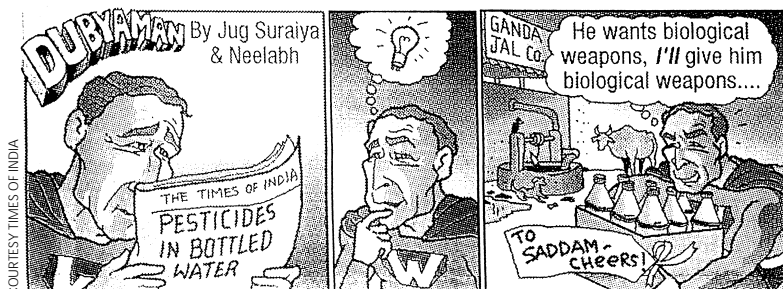
Government was embarrassed. BIS formed an expert group to look into the matter. It proposed new standards for bottled water, which recommended quantified maximum residue limit for individual and total pesticides. It also recommended that a total of 32 pesticides should be screened and analysed by an accredited laboratory, using internationally established test methods.

On another front, a four-member committee — under Satwant Reddy, additional secretary in the Union ministry of consumer affairs, food and public distribution — set up to study the proposed notification submitted its report on March 25. The committee supported the proposed notification but said that when “BIS establishes a standard it must specify the corresponding test methods” The proposed amended notification, which said that the analysis should be conducted using internationally established test methods, was “vague” and “BIS should set up another committee to specify testing methods.” The report was submitted to Sharad Yadav. He asked BIS to set up a committee to look into testing methodologies. That seemed to be the end of the matter.

While all this was going on, Union minister for health and

family welfare Sushma Swaraj grandiosely declared that by April 1, 2003, the new standards would be adopted via an amendment in the PFA Rules, 1955. But the April 1 deadline came and went. The new standards couldn't be adopted because public comments on the draft rules were being studied. On April 7, the matter was placed before the Central Committee for Food Standards (CCFS), the highest body in the country that sets mandatory minimum safety standards for food items. It unanimously agreed that new standards should be adopted. The decision was communicated to Swaraj. And that, too, seemed to be the end of the matter.

Then in July, BIS and the ministry of health held parleys with scientists and industry. The BIS meeting cleared the notification with an amendment specifying the choice of testing methodologies, but even at this late stage, industry opinion



was that the proposed notification needed dilution before enactment.

Now the notification is official. It will come into force from January 1, 2004.

### Flash in the pan?

Arguably, the Indian government's ways of setting standards for food and similar consumables — drinking water, carbonated water — are standard-setting in themselves. No one the world over can follow it;

- The chief players in the standard setting exercise are the Union ministry of health and family welfare (MOHFW); the BIS, a nodal agency entrusted with the task of setting standards under the Union ministry of consumer affairs, food and public distribution (MOCAPFD); and the Union ministry of food processing industries (MOFPI). But other ministries, such as the Union ministry of agriculture and the Union ministry of commerce and industry, often play an important role.

All the ministries have their own system for setting standards in the country. Ineptitude and lack of scientific rigour mark the standard setting exercise in the country.

- At present, the Indian food industry is governed by 14 separate pieces of legislations, which specify different standards.
- The most important compulsory legislation is the PFA.

### Notified, at last

Ministry of Health and Family Welfare, Notification, July 18, 2003  
Prevention of Food Adulteration (1st Amendment) Rules, 2003

- Pesticide residues considered individually — not more than 0.0001 mg/litre (The analysis shall be conducted by using Internationally established test methods meeting the residue limits specified herein)

- Total pesticide residues — not more than 0.0005 mg/litre (The analysis shall be conducted by using internationally established test methods meeting the residue limits specified herein)

## “Reddy” remedies

Satwant Reddy committee: Report of the committee on the pesticide residue in packaged drinking water and packaged natural mineral water, March 25, 2003

### Setting standards

- BIS should have a core group of scientists from various fields to keep track of recent scientific and technical developments in critical areas.
- For the sake of transparency, the constitution of the various committees, panels or such bodies involved in standards formulation should be on the web.
- It is sometimes stated that vested interests, particularly big industry, influence BIS’ activity. This criticism emanates from the fact that standard formulation is a voluntary activity and BIS does not pay anything for participation in meetings of the technical committees. At times the participation of scientific organisations and consumer organisations remains on paper, while industry participates more actively.

### Implementing standards

- Enforcement of BIS Act is weak. Search and seizure operations are carried out on the basis of specific complaints. Prosecution does not reach its logical conclusion for several years.
- BIS should review its internal resources before accepting further responsibility. But once it accepts the responsibility, it must discharge it faithfully and not cite lack of human resources as justification for non-adherence to norms.
- BIS must revitalise its core competencies. Existing procedures, formulated several years ago, are shrouded in secrecy and confidentiality. These may be reviewed by expert groups, to achieve maximum transparency.

### Pesticide policy

- Need to review permissible limits of contaminants in other food products under PFA. This may also lead to a wider discussion regarding permissible levels of use of pesticides and fertilisers for agriculture and horticulture.

### Drinking water policy

- In developed countries all water for human consumption — publicly distributed or privately sold — conforms to a single standard: the one for drinking water. In India these standards are now limited to bottled water. Why? It is time that consumers demand pollution-free drinking water and the municipal machinery gears itself up to meet this rightly demand.

### Groundwater policy

- A water recharging system should be made mandatory for the bottled water industry. Before licence renewal, a no-objection certificate should be obtained from concerned monitoring agencies. There should be some guidelines regarding selection of a site where a bottled water plant is to be installed, to ensure that it is free from pollution. Disposal of waste from water purification plants needs to be monitored.

Under it, the manufacture, sale, storage or distribution of products not conforming to the standards laid down under the laws is a contravention leading to fines and imprisonment. The CCFS and its various subcommittees under the Directorate General of Health Services, under the MOHFW is responsible for operation and enforcement of the Act.

- The Essential Commodities Act, 1954 has a number of control orders to regulate manufacture and production of food. The Fruit Products Order, 1955 (FPO) which regulates fruits, vegetable products, sweetened aerated drinks and other like products, is operated by the ministry of food processing industries through the Central Fruit Products Advisory Committee. The ministry issues the license for manufacture and labelling of these products. In addition, there are specific orders for solvents and edible oil, flour, meat.

- BIS is an apex standard setting body in the country. It has statutory powers and was set up under the Bureau of Indian Standards Act, 1986. Till now BIS has specified standards for close to 17,000 products/items/technologies. Out of these, standards for only 168 commodities — mass consumption products affecting consumer health and safety — are mandatory via various acts or notifications of the government.

- The Director of Marketing and Inspection formulates standards known as AGMARK, under the provisions of the Agriculture Produce Grading and Marking Act and Rules (1986 and 1988). These standards certify quality in products. There are also non-starter schemes, like the ECOMARK, of the Union ministry of environment and forests (MOEF), which specifies standards for labelling environmentally friendly products.

- In 1995, the government appointed a task force under the chairpersonship of retired Justice E S Venkataramaiah to suggest a simplified and harmonised food law. The task force asked for a “paradigm shift in the legal framework to promote good manufacturing practices”. Then the prime minister’s council on trade and industry appointed a subject group on food and agro-industries headed by industrialist Nusli Wadia. It also called for harmonisation of laws under a single authority. Currently a group of ministers under the ministry of food processing industries is working on a comprehensive legislation on food standards. Whose interest will these new harmonised standards serve? That is a matter of frightening speculation.

- The March 25, 2003 report of the Satwant Reddy committee on pesticide residue in packaged drinking water and packaged natural mineral water makes important recommendations on standard setting in general (see box: “Reddy” remedies). But as yet, little is moving on this front.

These are glimpses into a regulatory scenario that’s quite nightmarish in its criss-crossings and cross-cuttings. If today, there is a clear need to regulate industries that are a challenge to public health, then the legally enforceable means that are available are nothing but swathes of cobwebs. If today, there is a clear need for regulatory institutions that are scientifically competent, then the current state of knowledge on cutting edge research and capabilities is bathetically minimal. If today, these institutions must become as powerful as industry in order to turn gazette notifications into a public good, then government lacks both brain and brawn.

**WANTED: precisely brain and brawn**

There are pesticides in manufactured consumables because there are pesticides in the 'raw water' used. There are pesticides in the source water because there are pesticides being blatantly used in fields. Thus any policy to provide consumers in India with quality consumables can do nothing until it takes into account these deadly chemicals. This causative logic is so plain it requires no articulation. Unfortunately, it needs to be.

This is one reason: "One should not be afraid of pesticides. They are in fact friendly and responsible for making us food sufficient" — O P Dubey, assistant director-general at the Indian Council of Agricultural Research quoted in the national daily *Times of India* on the issue of bottled water standards. This is another: "It will be premature for India to take a decision to adopt a strict standard" wrote Amit Mitra, secretary-general of the Federation of Indian Chambers of Commerce and Industry in a letter to the health secretary, on standards for bottled water.

Whatever agricultural scientists or industry bodies say, the larger issue that emerges from both the bottled water episode and now the test results is the need for stringent and quantified norms for pesticide residues in drinking water and other kinds of food. This has to be based on the available science of pesticide residue impact on human health. How does one determine this safe level? It requires a high order of scientific research on chronic exposure levels. It requires regular and periodic reviews of the latest research on the toxicity of these substances. Unfortunately, India, with its bombastic claims of scientific capacities, has neither worked on collecting evidence from pesticide use, nor done much toxicity research.

These processes can be put into motion. Till that happens, Indian standards for pesticides would have to be based on the standards set up different international agencies or governments, namely the World Health Organization (WHO), Food and Agriculture Organisation (FAO), the US Environment Protection Agency (USEPA)/Food and Drug Administration (FDA) or the European Union (EU). Most agencies stipulate different limits for different pesticides, whereas, EU under its norms, has agreed on a value, which is low enough to ensure that no chemical is toxic to the human being.

But ad hoc choosing from different sets of regulations could become a completely meaningless activity, simply because there would be no scientific basis selecting a particular norm from say, WHO in one case or USEPA/FDA in another.

The greatest danger is that new norms could become lax. Let's take an example.

Suppose we were to extend the spirit of the bottled water norms and make drinking water standards to regulate the pesticide chlorpyrifos. We could begin with WHO and FAO. They have separately, and jointly under the Codex Alimentarius Commission, set global guidelines for pesticide residues in food. These are minimal guidelines. The agreed norm is that

countries should set higher norms based on their individual conditions. So, for instance, WHO has recently issued draft guidelines for drinking water quality, in which, the proposed guideline limit for chlorpyrifos is 0.03 mg/l.

But recent research indicts this pesticide. A new study based in New York found that women exposed to chlorpyrifos during pregnancy gave birth to babies with reduced birth weight and reduce head circumference. This, researchers noted with worry, was when the mothers had very low levels of exposure to this pesticide. Thus if we were to go for chlorpyrifos norms, would the WHO guidelines not be inadequate?

Consider other complications. In 2000, Dow Chemicals was forced to withdraw Dursban (Dow trade name for chlorpyrifos) from residential and commercial use in the US. Currently its use is restricted in agriculture and USEPA is working towards a complete phase-out by 2005. But Dow is now busily promoting this chemical in countries like India. Needless to say USEPA has not put any restriction on export of chlorpyrifos. During 1999-2000, it was the fourth most used insecticide in India with an installed manufacturing capacity of around 14,000 tonnes. Therefore,

selecting a lax WHO guideline for this pesticide would be irresponsible, to say the least.

In addition, norms for regulating multiple residues do not exist in most regulations. Only EU stipulates a single residue limit (0.0001 mg/l) and multiple residue limit (0.0005 mg/l). This single quantified limit makes it easier for the regulator to enforce.

We do not have a pesticide policy in the country, to regulate this powerful industry and ensure the chemicals registered and sold are 'safe' for use. More importantly, as information about toxicity of pesticides only trickles in after these 'wonder' chemicals have been sold and we have been duped, our regulatory mechanisms need to be geared towards constant review and recall. Even more importantly, the policy must set the framework of research, innovation and experimentation, to introduce a new generation of environment-friendly pesticides in the country. This business must begin in earnest.



COURTESY UNNIV / INDIAN EXPRESS

**The business to introduce  
a new generation  
of environment-friendly  
pesticides must begin  
in earnest**

By regulation, the soft drink industry must use “potable” water. But what’s that? Who ensures municipalities meet standards? What standards? Under which law?

## We found to our horror...

Drinking water falls under the purview of Union ministry of urban development and poverty alleviation (MOUDPA). The Central Public Health and Environmental Engineering Organisation (CPHEEO) under this ministry sets guidelines for drinking water quality. Local bodies — such as municipalities and public health engineering departments in urban areas, and the Rajiv Gandhi National Drinking Water Mission under the Union ministry of rural development in rural areas — are expected to

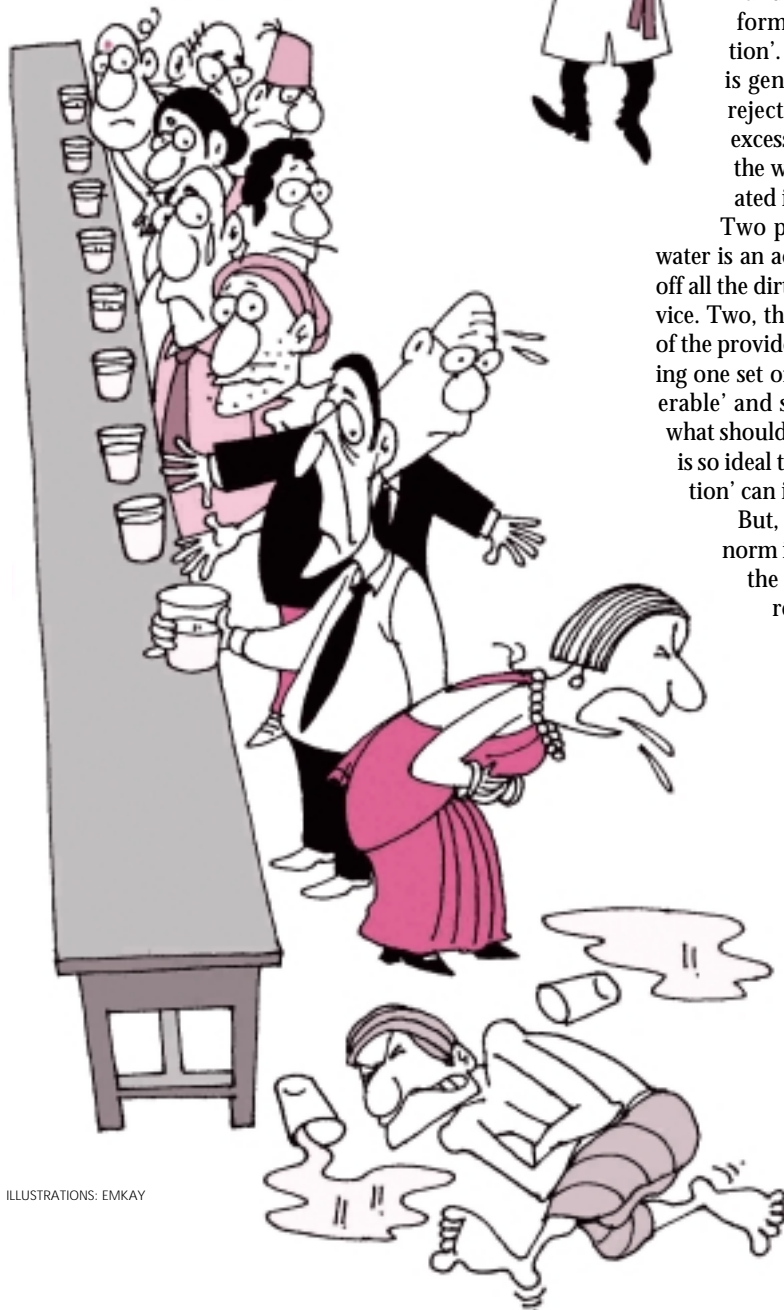
follow these guidelines. But water is a state subject. The role of MOUDPA is therefore merely recommendatory in nature. It is the state government that must adopt standards and enforce them.

CPHEEO has recommended drinking water quality standards in its *Manual on Water Supply and Treatment*. It says that, “the physical and chemical quality of drinking water should be in accordance with the recommended guidelines”. And then it goes on to describe the parameters, such as turbidity, chlorides, fluorides, arsenic, cadmium, pesticides and so on. The prescribed standards exist in two forms, or criteria: ‘acceptable’, and ‘cause for rejection’. ‘Acceptable’ defines the limits up to which water is generally acceptable to the consumers. ‘Cause for rejection’ means there are substances in the water in excess of the limit defined as ‘acceptable’, so rendering the water not acceptable. Still, the water may be tolerated in the absence of an alternative and better source.

Two points here are worth noticing. One, providing water is an act of defence: the standards are weapons to fend off all the dirty things in the water. It is not a fundamental service. Two, the standards assume no responsibility on the part of the provider to provide ‘clean’ water; thus water not matching one set of standards may be sickeningly passed off as ‘tolerable’ and so provided. The CPHEEO ‘acceptable’ limits are what should ideally be achieved. Simultaneously, ‘acceptable’ is so ideal that it needn’t be attempted at all: ‘cause for rejection’ can indeed be prescriptively tolerated.

But, the ‘cause for rejection’ becomes the ‘acceptable’ norm in most cases. Interestingly, the range provided in the guidelines is so vast that what should have been rejected as ‘unsafe’ water, becomes the norm for the supplying agency. For instance, in the case of total dissolved solids (TDS) standards range from 500 mg/l to 2000 mg/l. Ask the municipality. They will hide behind 2000 mg/l (see table: *From zero to infinity*).

The escape route suggested in the standards is not accidental. The helplessness that causes a standard-setting document to rely on a bizarre phrase such as ‘in the absence of an alternative and better source’ — this phrase is akin to an administration throwing up its hands and saying: “This is the best we can do. Take it, or leave it” — is an instituted one. The manual calls itself as ‘a code of practice which could serve as a guide in their (public health engineers) day to day practice’. Explains a senior CPHEEO official, “Our manual only recommends standards for drinking water, but they are not legally binding as they





## From zero to infinity

Vast range of various parameters in drinking water guidelines

Parameters	Bureau of Indian Standards IS:10500: 1991 <sup>1</sup>		Central Public Health and Environmental Engineering Organisation (CPHEEO) <sup>2</sup>		
	Requirement (Desirable limit)	Undesirable effects outside the desirable limits	Acceptable*	Cause for rejection**	Range between guidelines
Total Hardness (as CaCO <sub>3</sub> )	300	Encrustation in water supply structure and adverse effect on domestic use. Extendable to 600 in the absence of alternate source	200	600	3 times
Chlorides (as Cl), mg/l, Max	250	Beyond this limit, taste and appearance are affected. Extendable to 1000 in absence of alternate source	200	1000	5 times
Total dissolved solids, mg/l, Max	500	Beyond this, palatability may cause gastro-intestinal irritation. Extendable to 2000 in absence of alternate source	500	2000	4 times
Copper (as Cu), mg/l, Max	0.05	Astringent taste, discoloration and corrosion of pipea and fittings will be caused beyond this. Extendable to 1.5 in the absence of alternate source	0.05	1.5	30 times
Manganese (as Mn), mg/l, Max	0.1	Beyond this limit taste/appearance are affected. Has adverse effects on domestic use and water supply structures. Extended to 0.3 in absence of alternate source	0.05	0.5	10 times
Arsenic (as As), mg/l, Max	0.05	Beyond this the water becomes toxic. No relaxation is allowed.	0.01	0.05	5 times
Zinc (as Zn), mg/l, Max	5	Beyond this limit, it can cause astringent taste and an opalescence in water. Extended to 15 in the absence of alternate source	5.0	15.0	3 times
Anionic detergents (as MBAS), mg/l, Max	0.2	Beyond this limit, it can cause a light froth in water. Extended to 1 in the absence of alternate source	0.2	1.0	5 times
Aluminium (as Al), mg/l, Max	0.03	Cumulative effect is reported to cause dementia. Extended to 0.2 in the absence of alternate source	0.03	0.2	6.7 times

Note: \*'Acceptable' means limit upto which water is generally acceptable to consumers; \*\*'Cause for Rejection' means figures in excess of 'acceptable' but may be tolerated (in the absence of an alternative and better source), but only upto the limits set for this criterion. Above this, water source has to be rejected.

Source: 1. Bureau of Indian Standards 1991, *Indian Standard Drinking Water - Specification (First revision)*, New Delhi. 2. Ministry of Urban Development 1999, *Manual on Water Supply and Treatment, Third edition-revised and updated*, Central Public Health and Environmental Engineering Organisation, pp 14-15.

are not part of any gazette notification. Our standards are based on the World Health Organization (WHO) guidelines, and the drinking water standards proposed by the Bureau of Indian Standards (BIS).” He has further, compromising, information to give. “Consumers cannot take the local water supply agency to court if it fails to deliver the quality of water specified in the CPHEEO manual. To a large extent the quality also depends on the way consumers handle it,” he lamely ends.

Could this be true? The National Institute of Urban Affairs (NIUA), New Delhi, a premier institute for research, training and information dissemination in urban development and management, thinks so. “The role of MOUDPA is recommendatory in nature. The manual of CPHEEO only recommends what

should be the drinking water quality, but the standards are not legally binding on the local governments. BIS has also developed drinking water quality standards but they are not mandatory.”

That’s true. Apart from CPHEEO, BIS has also developed drinking water quality standards. But whereas BIS’ bottled water norms have been notified under the Prevention of Food Adulteration Act, 1954 (PFA), the drinking water norms remain voluntary in nature. A few years back, pressure was put on the Indian government to include drinking water under the PFA as ‘food’. Nothing happened.

SHOULD WE IMPROVE  
OUR DRINKING WATER  
QUALITY?



NO...BUT WE MUST DO  
SOMETHING TO IMPROVE  
THEIR IMMUNITY...

### When nothing happened

PFA was enacted in 1954. The Union ministry of health and family welfare (MOHFW) is its implementing agency. When the Act was notified, water was not covered under it as ‘food’. It defined food under section 2 (v) as “any article used as food or drink for human consumption other than drugs and water...”. According to sources at MOHFW, the reason is that water supplied through municipal taps is not used for drinking purposes alone. It is also used to other household chores like washing and cleaning. Hence, it is not food per se.

In 1996, a group of people recognised the fallacy. All of them were part of a Committee on Subordinate Legislation (CSL) that had got together to do a think, or rather a re-think, on the rules and regulations framed under the PFA. CSL proposed that water should also be included in the Act as a food item. The committee gave two reasons. As the *Fifth Report of Committee on Subordinate Legislation (Eleventh Lok Sabha)* published in 1997 puts it:

“One, water is treated and purified by the local authority before it is supplied to the public. Thus there is always a possibility of the purity of water supplied falling below the prescribed standard, which renders it injurious to health.

Second, sometimes it is found that the water supplied contains viruses or bacteria, which cause jaundice, typhoid and other water-borne diseases and people who consume it contract such diseases.

Whichever agency is responsible for supplying drinking water to the public has responsibility to ensure the purity of water so supplied and the committee strongly feels that the statute should bind it to do so. Otherwise the whole population will be exposed to serious health hazards, with no one owing responsibility for it”.

CSL recommended that immediate steps be taken by the government to amend section 2 (v) of the Act, to include water

treated and supplied by local authorities within the definition of 'food'.

Now get into complex, deliberative, bureaucratic give and take. The recommendations had to go to the MOHFW, ministry in charge. It did:

"Supply of potable water in the urban areas comes within the purview of Ministry of Urban Affairs and Employment (at present Union ministry of urban development and poverty alleviation). Supply of drinking water in the rural areas is ensured by the Ministry of Rural Areas and Employment (at present Union ministry of rural development) who have set up technology mission on water for providing water at each village. A letter has been sent to these Ministries to send their comments. On receipt of the same the matter will be examined to amend the PFA Act."

Files moved, in due course. In time — should we say: "duly"? — the Union ministry of urban development replied: "the widening of the definition of food to include water will bring it under the Prevention of Food Adulteration Rules and consequently would impose a legal commitment and obligation on the agencies for adhering to the recognised standards for potable water supplied by them. As you are aware, drinking water in urban and rural areas is generally supplied only by the State Governments undertakings or the local bodies. The burden of this commitment will fall, therefore, on these agencies and more than the urban local bodies the responsibility will be greater in the case of rural local bodies where the required standards have not yet been reached and who are also facing financial crunch."

As a bureaucrat would happily put it, this was an insuperable argument. Of simply not wanting to take on the task of providing clean water; of simply avoiding it; of representing a scene of change for the better as a pure financial nightmare. This is arrogant administration presenting itself as soft governance. This is plain shirking.

Unfortunately, CSL lost it right here. CSL finally lamely recommended that funds may be made available to these local bodies to help them supply 'good quality drinking water' and this could be implemented in phased manner.

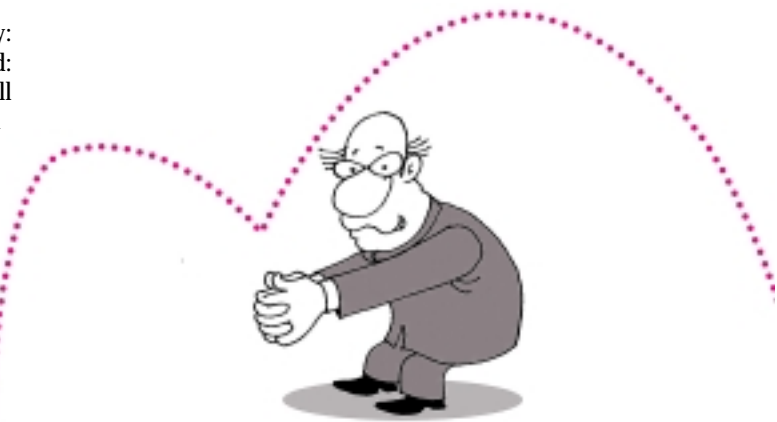
Almost a decade has gone by. But absolutely nothing has moved on this front. Drinking water remains unlegislated in India. So it is that, at present, we have PFA, which prescribes the standards for bottled water and is implemented by the MOHFW. Oh, there is also the Water (Prevention and Control of Pollution) Act, 1974. It monitors surface water quality, chiefly rivers. The Central Pollution Control Board under the Union ministry of environment and forests (MOEF) implements this legislation. Groundwater still remains unlegislated with an eternally drowned draft legislation at the central level, though some states such as Goa have enacted groundwater legislation (But see: *Crass act*, p 46). But what about drinking water?

Too much of a responsibility, it seems!



### Hold on. Define drinking water

What is 'drinking water'? The term is synonymously used with 'potable water', 'wholesome water', 'safe drinking water', or 'clean drinking water'. For instance, the Delhi Jal Board (DJB) website claims that that "drinking water, supplied by Delhi Jal Board, is potable, wholesome and conforms to the standards laid down by the Ministry of Urban Affairs and Employment. The quality of water is checked at every stage of treatment — from Raw Water stage to storage reservoirs and also in the distribution system at the Consumer's end". Questioned further about this DJB claim, Sanjam Chima, advisor public relations, DJB said, "We are following the water quality guidelines developed by the CPHEEO. As far as their legal nature is concerned,



you should either ask the CPHEEO or the Delhi government." Interesting. The body supplying drinking water to consumers, and monitoring its quality, does not know if the standards which it claims to be following are legally binding or not.

Admits an NIUA official, "I have not come across any common definition of drinking or potable water. It is very ambiguous and quite likely that it has not been defined legally." This lack of a common legal definition gives enough space to state agencies to play around with drinking water quality.

This becomes amply clear the moment one looks at various municipal byelaws.

### "As far as possible"

Water is a state subject. The Centre, therefore, can only 'recommend'. It is the state, and its (state-level) agencies, that have to ensure quality drinking water. Various municipal laws show government is completely non-serious about drinking water. According to the section 234 of the Calcutta Municipal Corporation Act, 1980, it is the corporation's duty to supply wholesome drinking water to consumers. The Act also says that the municipality should take steps to provide *as far as possible*, a supply of wholesome water. It further adds that the corporation shall, *paying regard to available resources*, provide civic services including water supply. Such clauses are more like escape routes.

The Rajasthan Water Supply and Sewerage Corporation Act, 1979 goes a step further. It makes no explicit mention of the corporation's duty to supply water to the consumer. Under section 42 of the Act, the department is absolved of not

supplying water when there's an accident, such as electric power supply failure or leakage or burst main pipes or obstruction or low pressure in the mains in summer, or a labour strike. The department retains the right to suspend water supply at any time and for as long as may be found necessary for repairs or for laying new lines.

The Delhi Municipal Corporation Act, 1957 says that steps should be taken to provide, *as far as possible*, a supply of wholesome water. The Act also says that when it is not practicable to provide such supply at a *reasonable cost* and there is danger to health from the quality of water being already supplied, water must be made available at a *reasonable distance* from every house.

The Tripura Municipal Act, 1994 says that every municipality shall either itself or through any agency (including a government department) *try to supply* water for the use of the inhabitants. The Act leaves it to the municipality to decide the standard and quality of water that is to be supplied for domestic or non-domestic use.

Says senior advocate Rajeev Dhavan, "Using phrases like 'as far as possible', or 'paying regard to available resources', shows how state governments are creating fuzziness and weakness in the law and avoiding any possible lawsuit."

### Who is responsible? Who can be responsible?

Experts claim that just because quality standards for drinking water have not been legislated in the country does not mean they do not exist. BIS is a statutory body set under the Bureau of Indian Standards Act, 1986. So, the standards it sets are part of the statute and should be observed. Secondly, the standards recommended by CPHEEO might not be statutory

in nature but are strongly indicative and should be applied. Vagueness in various municipal acts should not be read as absence of standards.

Some experts suggest that if one looks at drinking water as a 'commodity', then the services provided by the local bodies can be covered under the Consumer Protection Act (COPRA), 1986. In India, water supply is seen as a public health expense and not as a commodity.

Others contest that if we apply COPRA on drinking water, then it is as if the consumer is demanding something from a business entity, whereas right to clean water is a fundamental right. But opinion is crystal clear on one point: irrespective of whether water is a commodity or a public health expense, once drinking water is supplied, it should conform to specified standards.

Says Dhavan, "Non-inclusion of water under the PFA shows ineptitude on the part of the Indian government, which is trying to avoid direct responsibility. If water is covered under the PFA then writ petitions would start flying the very next day. Government does not want to guarantee quality of water because major water suppliers are government departments."

There aren't many lawsuits in this country that challenge the quality of water. One famous case is the 1990 case of Attakoya Thangal v. Union of India. The case was filed in the Kerala High Court (HC) in which the petitioner claimed that due to over-extraction of groundwater through handpumps and tubewells bored by the local administration at Lakshadweep, there was an ingress of salinity and people were being forced to drink saline water. The HC ruled: "Right to life is much more than the right to animal existence and its attributes are manifold, as life itself. A prioritisation of human needs and a new value system has been recognised in these areas. The right to sweet water and the right to free air are the attributes of the right to life. These are the basic elements which sustain life itself."

"This was a landmark judgement of the court, which linked right to clean drinking water with Article 21 of the Indian Constitution. It said that right to water means right to sweet water and not salty water. But such cases are rare," says Ritwick Dutta, an environmental lawyer based in New Delhi.

This is the fundamental problem with India's water policy. Right to water is agreed upon in principle and policy but is not clearly specifiable.

Suggests Videh Upadhyay of Enviro Legal Defence Firm, Noida, Uttar Pradesh, "The first and the foremost thing which we need to do is to clearly specify what right to clean drinking water means, which the Supreme Court of India (SC) upholds as a fundamental right. In last 5-6 years, many high courts have passed judgements on clean water, but there is no clarity as to what that right means in quantitative and qualitative means. Courts also leave it open-ended, free for interpretation. There needs to be categorical pronouncement by the SC as to what right to clean water means. The second important thing after this would be to see how this direction of the SC gets reflected in various statutes. Relevant changes would require to be made in specific sections of specific rules." ■

