

CSE & After
Varna Sri Raman

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Centre for Civil Society

K-36 Hauz Khas Enclave, New Delhi 110016
Tel: 2653 7456/ 2652 1882 Fax: 2651 2347
Email: ccs@ccsindia.org Web: www.ccsindia.org

"All substances are poisons; the right dose differentiates a poison and a remedy". Modern food regulation is about determining what that right dose is in our daily diet.

This paper aims to investigate how the Centre for Science and Environment (CSE) exposé affected the daily life of consumers in terms of standards and product usage.

The Controversy

CSE made public its report on 5 August 2003. The report claimed to have found pesticide residues in samples of 12 soft drink brands procured by it in the open market in Delhi. The report made a huge splash in the media. Subsequently the report was discussed in the Lok Sabha on 6 August 2003.

A Joint Parliamentary Committee of 15 members was constituted on 22 August 2003 on 'Pesticide Residues in and Safety Standards for Soft Drinks, Fruit Juices and other Beverages.' The JPC was to: a) Judge whether the CSE findings were correct or not and b) Suggest criteria for evolving suitable safety standards for soft drinks, fruit juices and other beverages where water is THE major constituent. The samples were tested at the Pollution Monitoring Laboratory (PML) of the Centre for Science and Environment (CSE).

The JPC collected evidence from- Representatives of 8 ministries, Representatives of CSIR, CFTRI, Central Food Lab (Kolkata), ICMR, NABL, APEDA, CSE, PepsiCo India, Coca Cola India, AASOCHAM, FICCI, Association of Indian Bottled Water Manufacturers', All India Food Processors' Association

Eight ministries were also asked to talk to the JPC. These were: Health and Family Welfare, Food Processing Industries, Consumer Affairs and Food and Public Distribution (Dept of Consumer Affairs) ,Water Resources, Environment and Forests, Urban Development and Poverty Alleviation, Rural Development (Dept of Drinking Water Supply), Agriculture (Dept of Agriculture and Cooperation)

The JPC collected fresh samples from the same manufacturing plants and sent them for analysis at the following laboratories: a) CFL, Kolkata b) CFTRI, Mysore c) CPCB, Delhi d) Shriram Labs, Bangalore. The labs upheld CSE findings except in the case of Malathion (which was upheld only by CPCB).

The JPC made the following comments:

- A single regulatory authority for food safety standards
- Public health should be a central concern in all policies

The CSE Version

The samples were tested for Organochlorine and Organophosphorus pesticides and synthetic Pyrethroids - all commonly used pesticides in India. All samples contained residues of four toxic pesticides: Lindane, DDT, Malathion and Chlorpyrifos. In all samples, levels of pesticide residues far exceeded the maximum residue limit for pesticides in water used as food, set down by the European Economic Commission (EEC). CSE claims that each sample had enough poison to cause - in the long term - cancer, damage to the nervous and reproductive systems, birth defects and severe disruption of the immune system.

Market leaders Coca Cola and Pepsi had almost similar concentrations of pesticide residues. Total pesticides in all PepsiCo brands on an average were 0.0180 mg/l (milligrams per litre), 36 times higher than the EEC limit for total pesticides (0.0005 mg/l). Total pesticides in all

Coca Cola brands on an average were 0.0150 mg/l, 30 times higher than the EEC limit.

Contaminants in Pepsi were 37 times higher than the EEC limit; they exceeded the norm by 45 times in Coca-Cola. Mirinda Lemon topped the chart among all the tested brand samples, with a total pesticide concentration of 0.0352 mg/l.

PML also tested two soft drink brands sold in the US, to see if they contained pesticides. They didn't.

The Reactions

"The report is baseless and should be disregarded. We conform to the best international norms. We're open to our product being tested anywhere in the world by an independent and accredited laboratory," said Rajeev Bakshi, CEO of Pepsi India.

Sanjiv Gupta, president of CocaCola India, said his company's products were tested at the best laboratories in India and abroad. "To maintain the sanctity of our products across hundreds of countries and billions of users we test our brands very regularly in top-grade laboratories in India and abroad," said Gupta. The cold drinks sector in India is a big money-spinner-over \$1.2 billion dollars! In 2001, Indians consumed over 6,500 million bottles of cold drinks.

The Problem

The soft drinks sector is exempted from the provisions of industrial licensing under the Industries (Development and Regulation) Act, 1951. It gets a one-time licence to operate from the ministry of food processing industries; this licence includes a no-objection certificate from the local government as well as the state pollution control board, and a water analysis report. There are no environmental impact assessments, or sitting regulations. The industry's use of water, therefore, is not regulated.

Standards

CSE was criticised for using EU standards as the comparative standards, which are known to be inadequate for dairy and vegetable products. CSE justifies its selection by explaining that the WHO norm for pesticides covers only 24 out of 49 pesticides globally. The US EPA provides only for 21. EU has limits for all 49.

Part of the duty of the JPC was to form guidelines for India since prior to the CSE controversy; no separate safety standards for soft drinks were in existence in India.

The key to managing pesticide risk is a measure of safety called ADI, or acceptable daily intake. ADI is that amount of a pesticide that we can ingest - daily, over a lifetime - without damaging health. It is expressed in relation to bodyweight (bw), so that safety levels for adults and children are variously calculated.

The point is to determine that limit till where a pesticide cannot cause harm: this is called NOAEL, or No Observable Adverse Effect Level. Sometimes, it is not possible to deduce this number. In such cases the safety mark is established at that point where the first sign of adverse effects appear. This is called LOAEL, or Lowest Observable Adverse Effect Level.

Both these measures indicate the long-term effect on health, or chronic toxicity. Sometimes a single dose is lethal. To tackle such circumstances, global agencies also establish safety limits for acute toxicity, exposure in the short term. Thus JMPR and the United States Environment Protection Authority (USEPA) set what is called the Acute Reference Dose (ARfD), the maximum residue that can be safely consumed at a meal or in a day. "Acute

toxicity is typically calculated from LD-50, literally a potent quantity of pesticide that can kill 50 percent of test animals either through ingestion or through contact with skin." (Toxics Link)

ADI and ARfD are crucial tools to manage risk, but for them to be consistently effective, they need to be (a) constantly updated as the science improves; and (b) calculated on the basis of the latest, most credible data. In India this is a problem.

Water

Coke and Pepsi blame water quality standards in India for pesticide residues they claim existed only in that 'one' batch. Let's look at the water quality in India. The packaged water industry is worth Rs 1,000-crore. Prior to the Coke-Pepsi expose, CSE cracked down on packaged and bottled water. The whole report resulted in confusion on whether bottled water companies should adhere to the European Union norms or the World Health Organisation parameters or the Bureau of Indian Standards (BIS). Then the Health Ministry got into the act, detailing the parameters for pesticide-residue. The Food Processing Ministry held an inter-ministerial meeting on the same issue. The MoCA conducted a countrywide raid. Next they revoked licenses for eight locations where water was being bottled by different companies. (see annexure one)

Laws and Regulations

What governs food safety in India? Two legislations regulate pesticides in India - the Insecticide Act, 1968 (IA) under the Union ministry of agriculture; and the Prevention of Food Adulteration Act, 1954 (PFA), under the Union ministry of health and family welfare. The former's provisions are enforced by the Central Insecticide Board (CIB) and Registration Committee (RC). The over 25-member strong CIB, headed by the Director General of Health Services, meets once in six months to advise on matters related to administering the Insecticide Act.

The RC is headed by the agriculture commissioner and meets once every month to register pesticides for use in India and for export. It is supposed to do so after satisfying itself about a pesticide's efficacy and safety to human beings, animals and the environment; relevant data to this end are collected from companies.

But they do not fix the ADI of a pesticide to be registered, nor set MRLs on food commodities. In global practices, the agency registering the pesticide establishes the ADI, sets MRLs and then ensures that the cumulative exposure is within the safety levels.

In India, a pesticide is registered without any of these mandatory safety regulations. There is no legislative provision to link pesticide registration to setting MRLs. IA mandates registration, but PFA mandates MRLs. Of the 180 pesticides currently registered, MRLs have been set only for 71. In other words, more than 60 percent of pesticides currently registered have no MRLs.

The All India Coordinated Research Project on Pesticide Residues (AICRPPR) under the Indian Agricultural Research Institute (IARI) monitors pesticide residue. But its mandate is to research; it cannot enforce standards.

Aftermath: Sales Effects

"On the ground, bottled water sales have not really dipped though customers are a little more wary," said Mr. Rajendra Bhansali, President KBWMA. "I have personally not seen in a dip in sales," Mr. Bhansali, who runs Oswal Beverages, said. None of the 61 small units in

Karnataka have reported a drop in production either, though some of them have complained of lower sales. "After all, what alternative does the consumer have?" asked Mr Bhansali, explaining the trend.

"Our sales are on a decade high now" Rajeev Bakshi, CEO of Pepsi India

"Coke is expanding and we have only consumers to thank" Sanjiv Gupta, president of Coca-Cola India.

Pepsi and Coke both faced initial losses. Pepsi suffered a Rs 265 crore loss, Coke too accumulated losses of Rs 650 crore in the same period. They recovered dramatically though, with over 400 million dollars of profit later! (*Businessline*, 22 October 2001)

Have Regulations Changed?

Yes they have. The JPC recommended—

- There is a need to regulate this product through a national standard.
- The standard should include a wide range of ingredients used in the formulation of the product
- Raw material ingredients should specifically state the quality and safety requirements so as to ensure a safe end product. Limits for physical, chemical and microbiological parameters should be well defined as they are critical to safety.
- Water quality standards need to be strictly adhered to
- Packaging requirements need to be strictly adhered to

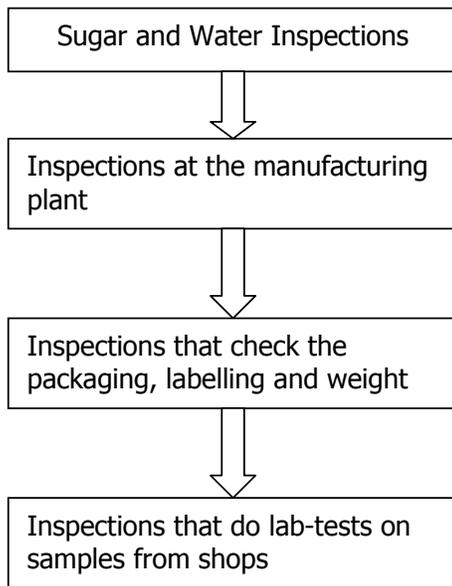
The soft drinks industry is extremely unregulated and also exempt from the provisions of industrial licensing under the Industries (Development and Regulations) Act, 1951. It gets a one-time license to operate from the Ministry of food processing industries, which includes a no objection certificate from the local government and a water analysis report from a public health laboratory. It also requires a NOC from the concerned State Pollution Control Board. There is no mandatory requirement for an EIA or citing regulations for the industry. Its use of water—largely unpriced ground water—is not regulated.

The new standards set were as follows: (what these standards are based on is still unknown):

- No pesticide residue in any individual unit of food/drink should exceed 0.0001 mg/litre
- Total pesticide residues cannot be more than 0.0005 mg/litre

The JPC also mandates that independent sampling of soft drinks and other beverages be done by independent accredited labs every six months. The inspections have never taken place thus far at my case study site i.e. 'Sabka Bazaar' in South Extension II.

The newly instituted inspections are four leveled:



I was unable to check if the newly instituted inspections take place at the first two levels. Since the manufacturing plants for both Pepsi and Coke are in Kerala, the packaging plant at Faridabad has had no inspection under this new scheme post the controversy. The inspections in place are the same as they were prior to the controversy which consists of a checklist mechanism put in place by the soft drink giant's own employees; there is no external monitoring. Shops have not had any random checks either and in-fact have no clue about any such provision made by the JPC post CSE.

Evidently regulation and consumer behaviour have not altered at all. One wonders what the point of the whole controversy was.

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Text

Joint Parliamentary Commission Report on 'Pesticide Residues in and Safety Standards for Soft Drinks, Fruit Juices and other Beverages'

ANNEXURE

Quality Criteria of Drinking Water

Prescribed by Indian Standards Institution and Indian Council of Medical Research

Prescribed by ISI (IS:10500-1989); Prescribed by ICMR

Standards of Bacteriological Quality

- i) Water in Distribution System
 - a) Throughout year, 95% of samples should not contain any coliform organisms in 100 ml.
 - b) No sample should contain E. Coil in 100 ml.
 - c) No sample should contain more than 10 coilform organisms per 100 ml; and
 - d) Coilform organisms should not be detectable in 100 ml. of any two consecutive samples.
- ii) Unpipd water supplies: Where it is impracticable to supply water to consumers through a piped distribution network and where untreated sources, such as wells, boreholes and springs which may not be naturally pure, have to be used, the requirements for piped supplies may not be attainable. In such circumstances disinfection is most desirable and considerable reliance has to be placed on sanitary inspection and not exclusively on the results of bacteriological examination.

Standards of Physical & Chemical Quality

SI No	Substance or Characteristic	Prescribed by ISI Requirement (Desirable Limit) Max. Permissible level	Prescribed by ICMR Highest Desirable Level	Maximum Permissible level
(1)	(2)	(3)	(4)	(5)
1.	Colour, Hazen Units	10	5 units	25 units
2.	Odour	Unobjectionable	Unobjectionable	Unobjectionable
3.	Agreeable	Unobjectionable	Unobjectionable	Unobjectionable
4.	Turbidity	10 NTU	5JTU	25 JTU
5.	Dissolved solids, mg/l	500	500	1500*
6.	pH value	6.5 to 8.5	7.0 to 8.5	6.5 to 9.2
7.	Total hardness (as CaCO ₃), mg/l	300	300	600
8.	Calcium (as Ca), mg/l	75	75	200
9.	Magnesium (as Mg), mg/l	30	Not more than 50 mg/I, if there are 200 mg/I sulphates; if there is less sulphate, magnesium up to 100 mg/I, may be allowed at the rate of 1 mg/Img. for every 4 mg/I decrease in sulphates	
10.	Copper (as Cu), mg/l	0.05	0.05	1.5
11.	Iron (as Fe), mg/1	0.3	0.1	1.0
12.	Manganese(as Mn),mg/1	0.1	0.1	0.5
13.	Chlorides (as Cl), mg/l	250	200	1000
14.	Sulphate (as SO ₄), mg/l	150	200	400
15.	Nitrate (as NO ₃), mg/l	45	20	**
16.	Fluoride (as F), mg/I	0.6 to 1.2	1.0***	1.5
17.	Phenolic Compounds (as C ₆ H ₅ OH),mg/I	0.001	0.001	0.002
SI No	Substance or Characteristic	Prescribed by ISI Requirement	Prescribed by ICMR Highest Desirable	Maximum Permissible level

		(Desirable Limit) Max. Permissible level	Level	
18.	Mercury (as Hg),mg/l.	0.001	--	0.001
19.	Cadmium(as Cd),mg/l	0.01	--	0.01
20.	Selenium (as Se),mg/l	0.01	--	0.01
21.	Arsenic (as As),mg/l	0.05	--	0.05
22.	Cyanide(as CN), mg/l.	0.05	--	0.05
23.	Lead (as Pb),mg/1.	0.10	--	0.10
24.	Zinc (as Zn), mg/l	5	--	--
25.	Anionic detergents (as MBAS), mg/l	0.2	--	--
26.	Chromium (as Cr6+), mg/1	0.05	--	--
27.	Polynuclear aromatic hydrocarbons(as PAH), mg/1	-	--	--
28.	Mineral oil, mg/1	0.01	--	--
29.	Residual free residue free Chlorine, mg/1.Min.	0.2	--	--
30.	Pesticides	Absent	--	--
31.	Radio-active materials:		--	
	a) Alpha emitters uc**** per ml, Max.	10-8	--	3 pci/l*****
	b) Beta emitters uc per ml, Max	10-7	--	30 pci/1

**Dissolved solids relaxable upto 3000 mg/1 in case where alternate sources are not available within reach.*

*** More information is required to prescribe a value but in no circumstances should the level exceed 100 mg NO3.*

**** The presence of fluoride in drinking water in excess of 1.0 mg/1. gives rise to dental fluorosis (mottling of varying degrees of severity in children. When present in high concentrations, fluorides may eventually cause endemic cumulative fluorosis with resultant skeletal damage in children and adults.*

***** uc – micro Curie*

****** pCi – 'Picocurie'- unit of radio-active disintegration, also known as micro microcurics.*